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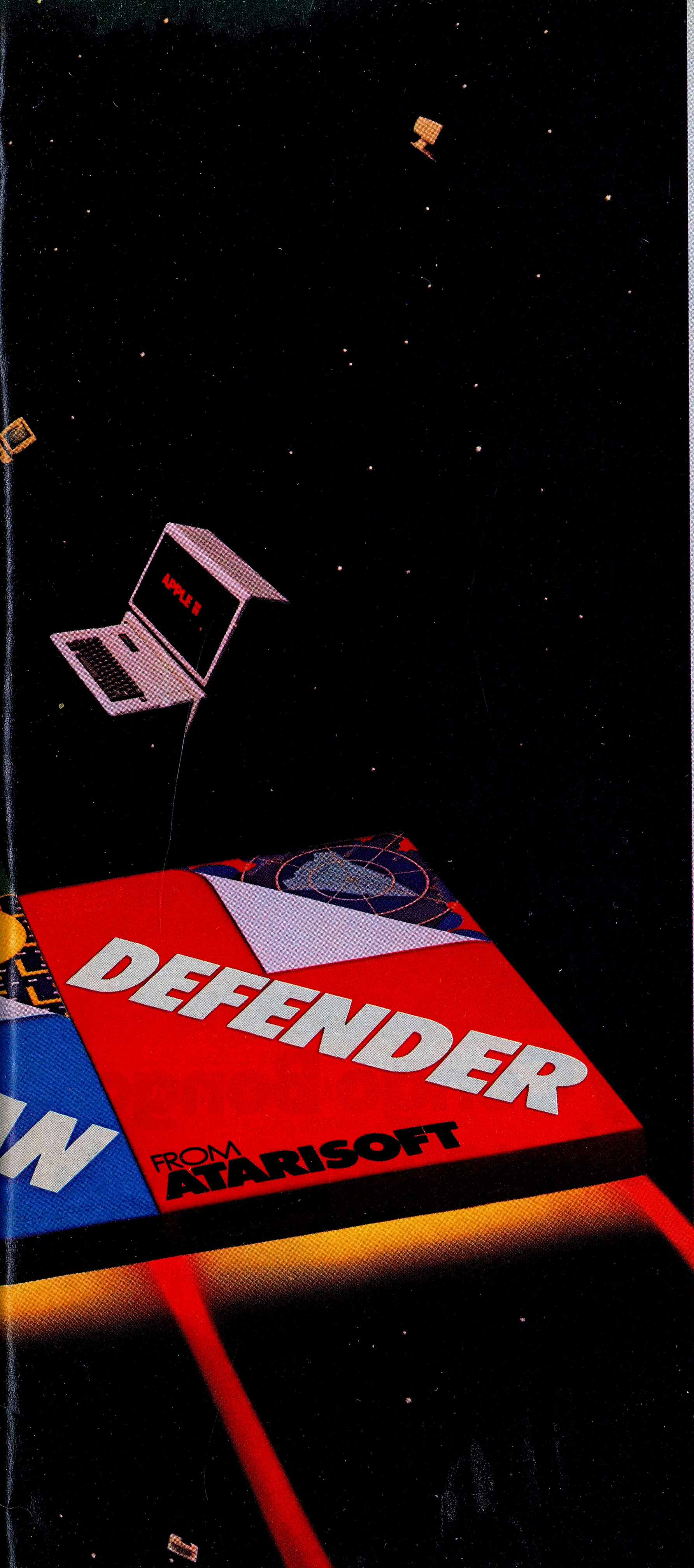

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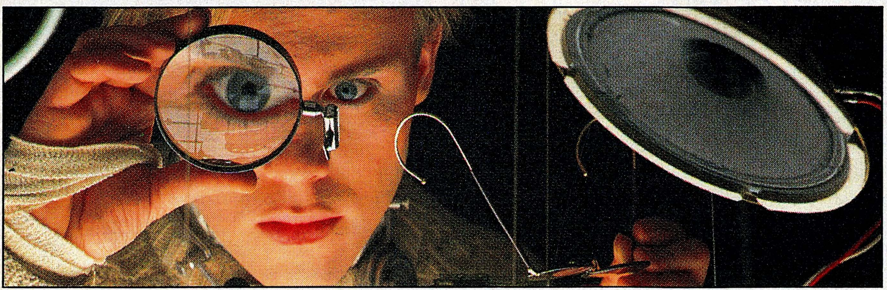
MENU

DECEMBER 1983/JANUARY 1984 VOL. 1, NO. 3

FEATURES



COMPUTER ROCK'S FIRST STAR 22
Thomas Dolby, 24, isn't blinded by science. On his new album, he makes witty rock music with some help from computers. An exclusive ENTER interview.

ELECTRONIC LPs 28
How The Police, Styx, Billy Joel and others use computers in their music.

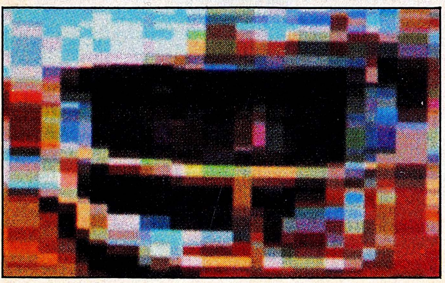
MY DAD'S A COMPUTER COMMUTER 32
Telecommuting has changed home life for Denise, 15, and her family.

GAME SYSTEM OR COMPUTER? 36
A holiday buyers' guide: What's the best purchase?

FIRST DOWN AND 10K TO GO 46
Computers are making big gains in pro football.

ROCK AROUND THE BLOCK 50
How you can make computer music, too.

PAGE 46



PAGE 36

DEPARTMENTS

FEEDBACK: Our readers write. 4

Q & A: ENTER's Help-Line. 6

BITS: Byte-sized news briefs. 8

RANDOM ACCESS: 10
Our kids' column.

USER VIEWS: Phil and Bernie rate 1983's top video games. 14

STATE OF THE ART: Touchpads. 54

BASIC TRAINING: Programming. 59

FICTION: 'The Hungry House.' 70

GAME PLAN: 78
Strategy for *Mr. Do!*

BOARD GAME: Binary Flip. 81

PENCIL CRUNCHERS:
Word Hunt. 84
Taparan. 89
Computer Crossword. 91

INPUT: Tell us what you think. 92

NEXT: Coming attractions and puzzle answers. 96

Cover Photo © James Wojcik

ON THE COVER, left to right: Apple IIe computer and monitor, courtesy Apple, Inc.; alphaSyntauri digital synthesizer and alphaPlus software courtesy Syntauri Corporation; VPK keyboard from Octave-plateau Electronics, Inc.; Drumulator digital drum machine from E-Mu Systems; Guitar, courtesy The Guitarman, NYC; Voyetra Eight polyphonic synthesizer, courtesy Octave-plateau.

feed back

WELCOME TO ENTER

According to my mother, I watched the first *Sesame Street* show you put on when I was six months old in 1969. I still have what remains of the premiere issue of *Sesame Street* Magazine. I have the first *Electric Company* Magazine, the first *3-2-1 Contact* Magazine, and now the first ENTER, 14 years later. The ages for your shows and magazines have almost paralleled my own age, and I'd just like to say "thanks" for all the years you've kept me entertained.

In sync with ENTER's theme, this letter was written with help from my Apple II+ computer. The interview with Matthew Broderick was my favorite part. "User Views" was also great, because it wasn't all praise and no criticism.

Thanks again for (at least) 14 years of fun!

—Steve Lauducci
Alexandria, VA

PAC STACK

You made a blooper. In your article "Arcade Arrivals" (October 1983) you said that there are five kinds of Pac-Man. You're wrong! There are six: *Pac-Man, Ms. Pac-Man, Baby Pac-Man, Super Pac-Man, Pac-Man Plus,* and now *Professor Pac-Man.*

—Nicole Runyon
Kalkaska, MI

BASIC FACES

My son and I enjoyed "Make a Face" by Jeff Nilson ("Basic Training," October 1983), but we discovered two major errors. The hair and face data must be loaded before the face can be drawn. The easiest way to correct this is to switch lines 50 and 60, that is, 60 becomes 50 and 50 becomes 60. Also, because the subroutine containing the READ statements will be run again if the answer to line 100 ("Make another face?") is "Y," an "OUT OF DATA" error will occur. This can be avoided by (1) changing line 110 to "IF YN$ = 'Y' THEN RUN" which will cause the screen to erase—or (2) by adding a line, "6085 RESTORE."

We added other features to the program since we are incurable hackers. We decided to add a question—"DO YOU WANT HAIR? (Y/N)"—rather than delete subroutine 7000. We changed line 70 to read:

```
70 GOSUB 9100: VTAB 23:
   INPUT ''DO YOU WANT
   HAIR? {Y/N}''; YN$
```

and then added LINE 75

```
75 IF LEFT$ {YN$,1} =
   ''Y'' THEN GOSUB
   7000: REM:: DRAW
   HAIR::
```

I am sure this will be just one of many modifications you receive. Your magazine is extremely well done and we enjoyed each and every page. We look forward to future issues.

—Steven D. Reich, M.D.
Justin Reich
Sturbridge, MA

Dear Dr. Reich and Justin:

Thank you for spotting our error in Basic Training's "Make a Face" in our premiere issue. We received corrected programs from a number of readers, including Stephen Engleman, Michael and Sid Kress, Paula W. Miller and Kim Gentry. —Ed.

(Continued on page 86)

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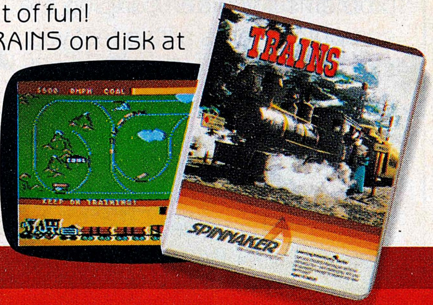

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questions & answers

Q&A

BY PHIL WISWELL

DEAR ENTER: If I leave the power pack on my game system plugged in, will it wear down?
—Andrew Northern,
New York, NY

DEAR ANDREW: I doubt that your power pack will need to be replaced because you left it plugged into an electrical socket. However, you should unplug your game or computer when it will not be used for a while (say, overnight). You could argue that a computer is an appliance—like a refrigerator, clock, blender or radio. People certainly don't go around unplugging *them* all the time. True. But the refrigerators and clocks need a constant source of electricity, and the blenders and radios draw no electrical current when switched off.

Your computer doesn't need electricity constantly, but it may draw some power even when it's turned off. That could cause problems if you don't unplug the computer. Here's a little test you can perform to find out if your computer draws electricity when it's off. Plug your system into the wall, but leave the power switch off and wait for about an hour. Then, feel the power pack and the table top directly under your machine. Is it hot? If not, you have nothing to worry about. But if your power pack and machine are not as cold as the floor or table they sit on, then a small amount of electrical current is reaching the pack, even though the machine is off. To avoid worrying or constantly crawling under your desk to unplug the system, you might want to buy a power box (available for less than $10). You plug your game player into the power box, then plug the box into the wall. The power box has its own ON/OFF switch. When it is in the OFF position, *no* current can reach the power pack.

DEAR ENTER: Why aren't the video games on Atari, ColecoVision, and Intellivision exactly like the arcade games you have to put a quarter in?
—Cheryl Jordan,
New York, NY

ILLUSTRATION © MIN JAE HONG

DEAR CHERYL: Your question is really about the difference in the way arcade and home video games are designed. A coin-operated arcade game machine is made to play just one game, and to display it with as much pizzazz as possible. In contrast, most home video game systems use cartridges. Each cartridge is a different game and the home machine must be able to play all of them. This means the home machine can't always include all the special features of each independent arcade machine. Also, coin-ops use special graphics monitors that yield a better, more detailed picture than any home television set can. They also use stereo sound and expensive sound effects.

Designers of home video games tell me that they could make a home video game as good as a coin-op. But, they wonder, who would pay several thousand dollars for it?

DEAR ENTER: In the first issue of ENTER, on page 14, you put 1K = 1,000 bytes. That's not quite true —it's 1,024.
—Krista Mayer,
Ridgewood, NJ

DEAR KRISTA: You are right. We should have given the exact number in our answer. Let's make it clear now: K is a symbol for 1,000.

But when you are talking about computers, K stands for 2^{10} bytes, or 1,024. This number is used for memory size; bytes always come in multiples of 2 and this multiple (2^{10}) is easy to remember. When most people figure K, they multiply by 1,000 to approximate the exact number. We wanted our first answer to be simple, but we abbreviated too much.

If you have a question about computers or video games, we'd like to help. Just send your questions to: Q&A, ENTER Magazine, CTW, 1 Lincoln Pl., NY, NY, 10023.

When you go in search of The Most Amazing Thing, don't expect to be home by dinner time.

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You'll visit the Metallican Auction, where you'll trade with tricky aliens. You'll shop for gadgets and gizmos to outfit the B-liner.

And you're off—in search of The Most Amazing Thing! It will take time to find it.

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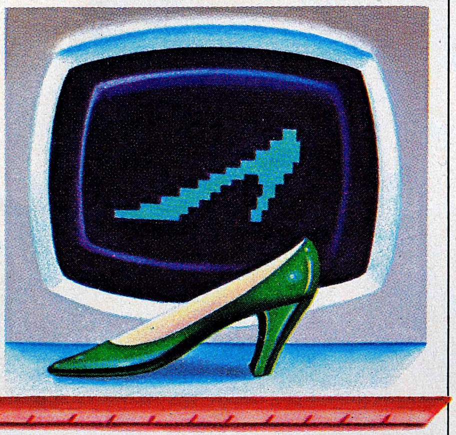

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The shoe must go on. But this is not so easy when you have two different-sized feet. Now, at last, someone is using a home computer to go toe-to-toe with the problem.

Jeanne Sallman of Indianola, Iowa, director of the National Odd Shoe Exchange (NOSE), uses her computer to let the organization's 14,000 members—who have only one foot or have feet of different sizes—know about odd shoes available in the size that will fit their odd feet.

It's a sizable task, we're sure, but with the help of a computer, NOSE knows.

APPLE APPEAL

Here's an offer from Apple we're sure-to-the-core will tempt elementary and high school computer clubs. The pioneer micromaker is sponsoring a community service contest in which the top two winning clubs will each receive $20,000 worth of computer equipment.

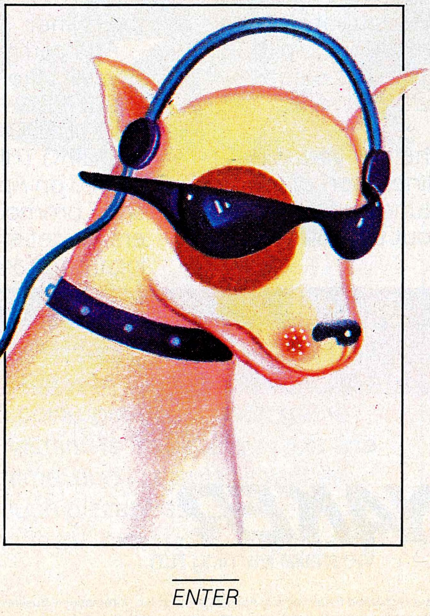
To win the contest, you have to come up with creative ways in which microcomputers can help your community or school. You can submit an actual program or just send in an outline of your idea. In addition to the top winners, the two runner-up clubs will each win $10,000 worth of Apple IIe computers, disk drives, and the like.

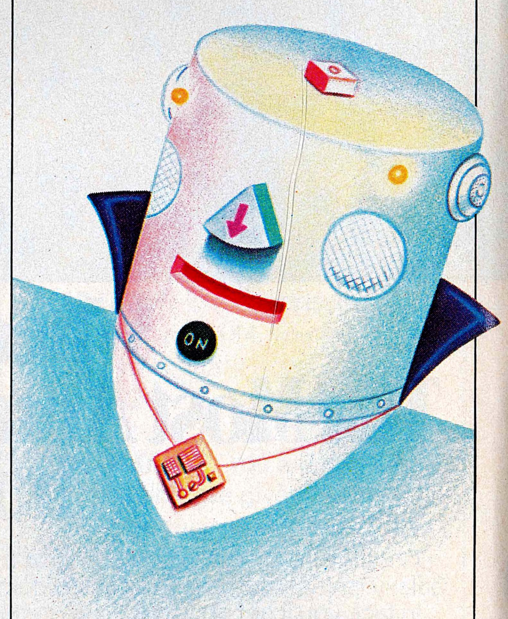
There are separate categories for elementary and high school clubs, and special awards for individual ideas. The contest deadline is March 1, 1984.

For more information, write: Apple Computer Clubs, Box 948, Lowell, MA 01853.

BARKS & BYTES

Those dogs along the Potomac River wearing the Walkman headphones aren't listening to the latest hits by the Rolling Bones or David Bowow. They're hi-fi spy dogs patrolling the suburban Washington D.C. offices of the Central Intelligence Agency (CIA). The CIA has equipped its guard dogs with headphones so the clandestine canines can receive orders from headquarters while they roam the grounds. If the dogs did have rock 'n' roll in those earphones, we're sure they'd love that Elvis Presley classic: "I ain't nothin' but a hound dog, spyin' all the time..."

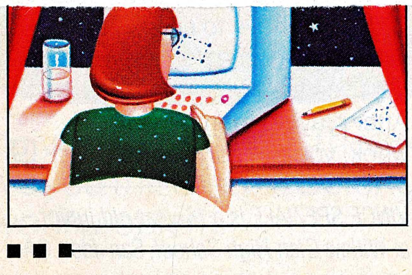




HIGH (TECH) FASHION

Almost all the male models at a recent Los Angeles men's fashion show were tall, dark and handsome. But the model that stole the show was short, shiny...and a robot.

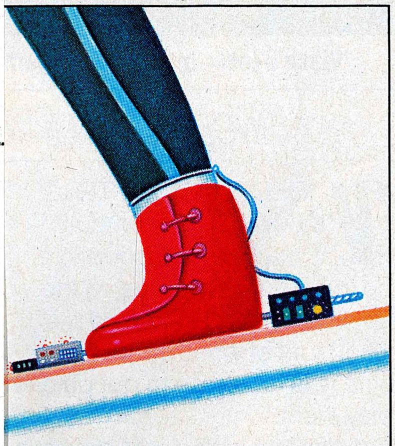
This distinctive hunk of hardware was on hand to introduce a new line of high-tech fashion accessories—computer jewelry for men. The jewelry, created by the Computer FX Company of Okemos, Michigan, features real computer circuit boards that have been cast in nickel and copper against a high-gloss background. Most of the computer-look belt buckles, key chains, money clips



face one obstacle after another. What are you going to do about that burning bush, for example? Then, when you think you're safe, you're overwhelmed by frogs. It's a regular rain of plagues out there. As you escape, with Pharoah in hot pursuit, the Red Sea parts...if you're lucky.

This may not sound like the world's most original computer ame, but it does have the best uthor. After all, *Exodus*, a new dventure game released by the avka Corporation, is based on e Bible. Davka offers a whole ost of educational religious software, including such classics as e *Game of Jericho* and *Bible aseball*. While your performance n these games might, with practice, become miraculous, we're orry to say that none of them are rogrammed to forgive your sins.

ILICON SLALOM



Is it really a good idea to go kiing with a computer strapped your leg?

It could be a very good idea. he computer in this case is a icrochip attached to ski bind-ngs. Every millisecond, the chip onitors your lower leg motion. If e tension on your legs becomes o great, the chip automatically eleases the skis from their bind-ngs. These very special ski bindings were developed by University of California Professor Maury Hull to prevent broken bones and strained ligaments.

Don't start to hotdog right away, though. These microchip bindings won't hit the slopes until 1985.

(Continued on page 88)

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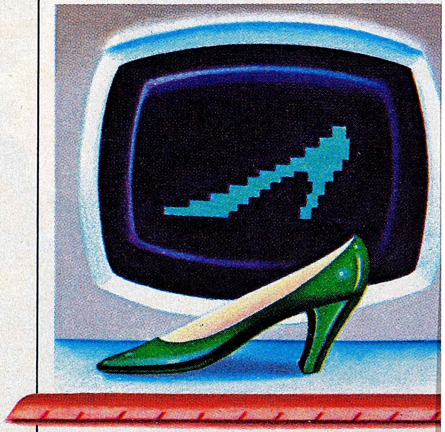

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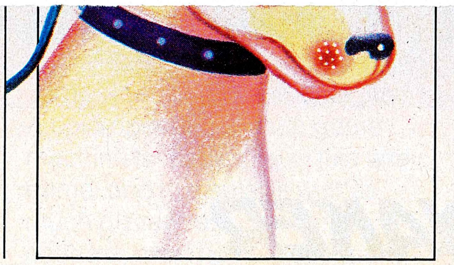

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Boulder, CO 80321

been cast in nickel and copper against a high-gloss background. Most of the computer-look belt buckles, key chains, money clips and pendants sell for under $15.

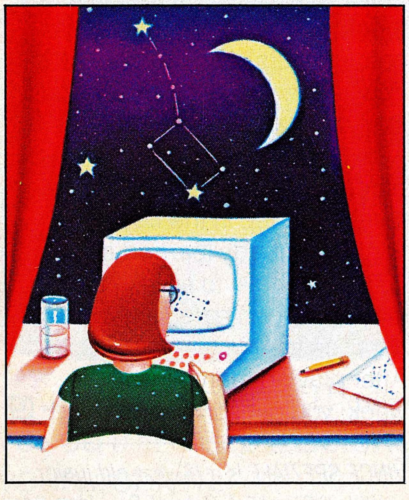
"The look is clearly calculated to appeal, and should take a big byte of the men's fashion accessory business," claims the fashion-plate robot.

A STARRING ROLE

Is your Atari an Aries? Your PC a Pisces? Your Commodore a Capricorn?

Computers seem to be in the stars for today's professional astrologers. Micros and Astrological software were topics of universal speculation at a recent New York gathering of the National Council for Geocosmic Research (that means stargazers). In addition to their anticipated meditations on planetary alignment, the assembled astrologers found themselves pondering peripherals and pursuing the perfect prognostication program.

A move to computers makes sense, mystically speaking. It used to take hours to draw up a personal birth chart. With the right software, an IBM PC can do it in 30 seconds. It's a sign of the times.



JINGLE BELLS, JINGLE BELLS...

SEASON'S BLEEPINGS

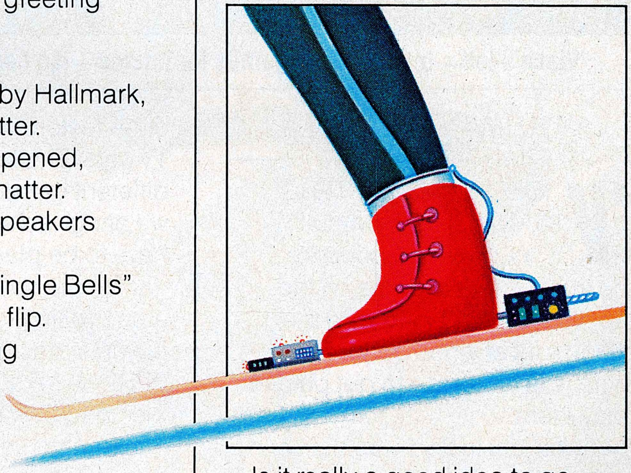
'Twas the night before Christmas.
You were trying to sleep.
But those microchip greeting
  cards
Continued to bleep!
These cards, made by Hallmark,
Will raise quite a clatter.
Each time they are opened,
They start up their chatter.
With batteries, tiny speakers
And a tinier chip,
The card will play "Jingle Bells"
And you'll just about flip.
Each card has a song
—about Santa
  or joy—
And costs seven
  dollars
(as much as a toy!)
There are six cards that play tunes
About great Christmas cheer.
But what about Chanukah?
Well, maybe next year.

LET MY PEOPLE VIDEO

You are a slave in ancient Egypt. You want your freedom, but you face one obstacle after another. What are you going to do about that burning bush, for example? Then, when you think you're safe, you're overwhelmed by frogs. It's a regular rain of plagues out there. As you escape, with Pharoah in hot pursuit, the Red Sea parts...if you're lucky.

This may not sound like the world's most original computer game, but it does have the best author. After all, *Exodus*, a new adventure game released by the Davka Corporation, is based on the Bible. Davka offers a whole host of educational religious software, including such classics as the *Game of Jericho* and *Bible Baseball*. While your performance on these games might, with practice, become miraculous, we're sorry to say that none of them are programmed to forgive your sins.

SILICON SLALOM



Is it really a good idea to go skiing with a computer strapped to your leg?

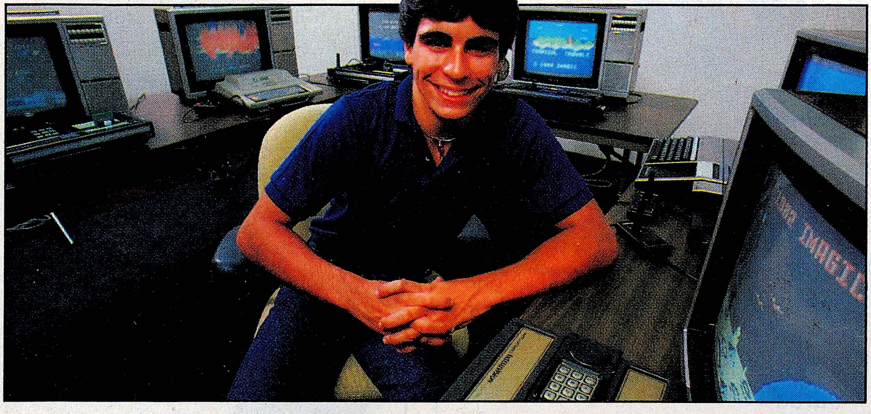
It could be a very good idea. The computer in this case is a microchip attached to ski bindings. Every millisecond, the chip monitors your lower leg motion. If the tension on your legs becomes too great, the chip automatically releases the skis from their bindings. These very special ski bindings were developed by University of California Professor Maury Hull to prevent broken bones and strained ligaments.

Don't start to hotdog right away, though. These microchip bindings won't hit the slopes until 1985.

(Continued on page 88)

RANDOM ACCESS

PAID TO PLAY



Vince's job—testing video games for Imagic—isn't *all* fun and games.

PHOTO © ED KASHI

BY VINCE SPEZIALE

'VIDEO GAME TESTERS WANTED FOR IMAGIC" It sounded too good to be true, but there it was on the application right in front of me. I play a lot of video games, and here was a chance to get paid to play them.

It was just lucky I was delivering papers that day to the office at my school, Willow Glen High in San Jose, CA. When one of the office workers asked if I wanted an application, I eagerly said "Yes!"

The people at the Imagic game company had to sort through more than 500 applications to choose about 20 game testers. Since my family owns a game system and I play often, I knew I had a good chance. But it was tough to wait.

A few weeks passed and then I got a call from Imagic. They asked if I could start work the next day. I was the happiest kid on the block when I started in January 1983.

Now, for three hours every day after school, I go to Imagic and test new games. I work with the other testers in a room filled with TV sets. The sets are attached to different game systems. Each day we are given a list of games that have to be played. Because these games are so new, they usually aren't yet in the cartridge form you buy in stores. Instead, we get EPROM—erasable, programmable, read only memory—chips. The designers program their games onto these chips so they can later go back and make changes.

Our main job is to troubleshoot, looking for any bugs or flaws in the game program. These bugs can make crazy things happen in the game. In the game *Moon Sweeper*, for example, I found a bug that made my spaceship go *through* the planet instead of landing on it. In a program for *White Water*, I was attacked by pirates even when I'd done everything to make them stop.

We try to describe these problems as best we can and, if possible, get one of the Imagic people to take a picture of the bug as it appears on the screen.

Our comments and these pictures are given to the game designers, who then come talk with each of us individually about the bugs we found. The designers want to know exactly where and when each bug occurred so they can track it down and get rid of it.

Like anyone who plays video games, we game testers compete against each other. If a program bug doesn't get in our way, we rack up some pretty high scores. The best scores are listed on a poster in the game testing room. My personal bests are in *Atlantis* (170,000), *Dragonfire* (30,000) and *Laser Gates* (85,000).

Not only does this high scoring make work more fun, it helps the designers learn more about their own games. If a designer thinks our scores are too low, the game will be made easier. And if scoring seems too high, the game can be made harder to beat.

It gives me a good feeling to see that I helped to get a game on the market, and to know that I got to play it before anyone else.

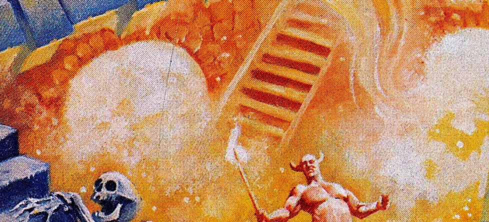
But, best of all, I've made many new friends among my fellow game testers. And the people at Imagic are very nice—they don't treat us like kids. They respect us.

I would like to work with computers in the future. Being a game tester is a step in the right direction. I've already learned a lot.

But I do have to admit I don't play video games at home or in arcades as much as I used to. After playing them at work all week, you get sort of burnt out!

VINCE SPEZIALE is a 16-year-old junior at Willow Glen High School, San Jose, CA.

THIS NEW INTELLIVISION® VIDEO GAME HAS 4539 TUNNELS, 256 DUNGEONS, 1 HIDDEN TREASURE AND NO ROOM FOR ERROR.



TREASURE OF TARMIN™* cartridge is the newest video game challenge in the ADVANCED DUNGEONS & DRAGONS™* series for Intellivision. But beware. It is no game for mere mortals.

You must be more than clever. You must master the skills of mystic weaponry and sorcery. Or suffer destruction by over fifty different types of hideous creatures. And once you begin your quest for the treasure, there's no turning back.

So if you dare take on this video game, remember, you've been warned. These dungeons are going to give you the creeps. Getting rid of them is your problem.

MATTEL ELECTRONICS®
Advanced Dungeons & Dragons™
TREASURE OF TARMIN™

NEW FOR INTELLIVISION®

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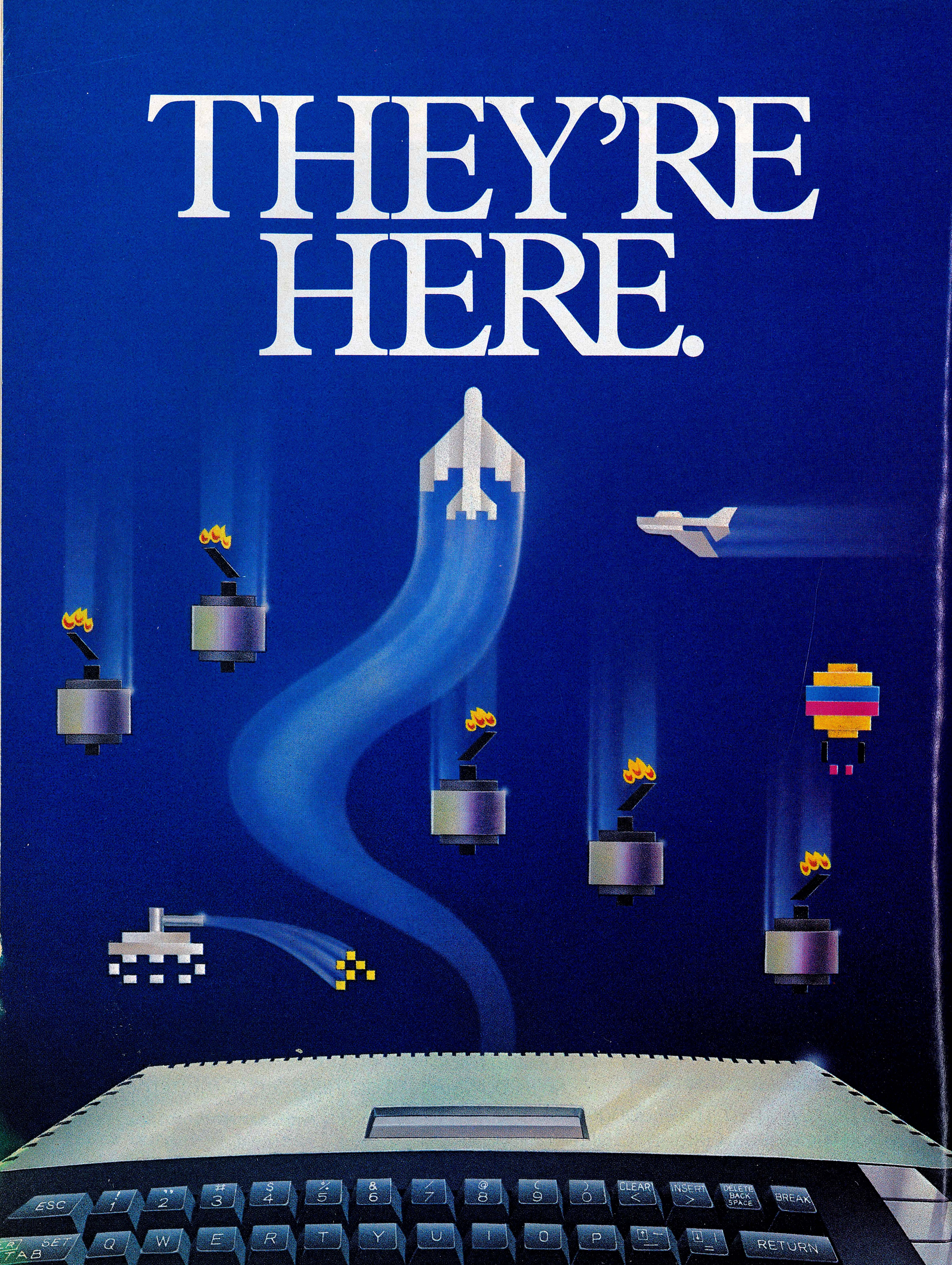

THEY'RE HERE.
ESC
CLEAR
INSERT
DELETE BACK SPACE
BREAK
TAB
SET
Q
W
E
R
T
Y
U
I
O
P
RETURN

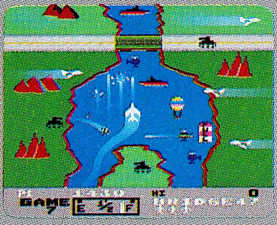
River Raid™ and Kaboom!® are here. And your Atari® home computer just became more fun than ever.

Because River Raid and Kaboom! have been re-designed to take full advantage of home computer capabilities.

Far beyond anything you've ever experienced before in video games.

Unique graphics, crisp detail and brilliant sound all come together with spectacular impact.

River Raid,™ the battle adventure up the "River of No Return."



The realism of Carol Shaw's River Raid is utterly amazing.

It challenges your reflexes, stamina and strategic savvy as you battle your way up the winding river.

Enemy choppers. Jets. Tanks. Hot-air balloons. Ships. All out to blow you to smithereens.

But you strike back.

Keeping one eye on the ever-changing terrain.

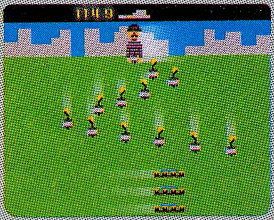
Bridges. Mountains. Canyon walls. Islands.

One false move and it's curtains.

And if you're up to it, now you can skip easier sections of the river and get right to the heart of the battle.

Everything that made River Raid such a smashing hit is here. And tons more.

Kaboom!®, the award-winning game of catch with buckets and bombs.



Larry Kaplan's Mad Bomber is back. The buckets are back.

But now, in Paul Willson's adaptation, you can drop the bombs, while someone else tries to catch them.

Imagine dropping bombs. Faster and faster.

To the ever-quickening pace of the 1812 Overture.

You shift right. Left. Back again. All the way right.

He misses! You win!

Now it's your turn to catch. The pressure mounts.

The bombs start flying. You dash to catch them.

And so it goes on into the night.

And everytime you hit a new high score, it's displayed after the game, just like at the arcade.

Kaboom! and River Raid for your Atari home computer.

They're here.

Just for the fun of it.

RIVER RAID
KABOOM!

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ACTIVISION®

user views

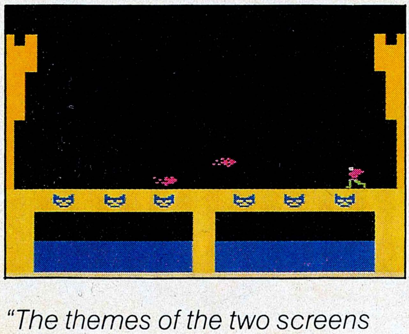
BEST OF '83

BY PHIL WISWELL AND BERNIE DEKOVEN

The games for this month's column were very difficult to select. After all, how can one really define the all-around "best" video games? There are so many types, so many different styles of games. We wrestled with a long list of titles for several weeks, playing them over and over again. Then it hit us. The best way to make the list is by pretending we've been banished to a deserted island. We can bring along only a few video games, and we must play them for the rest of our lives. With that in mind, we have chosen our "bests" very carefully! (Next month, User Views will review the best computer games of 1983.)

DRAGONFIRE

(Imagic, VCS, $31.95)



"The themes of the two screens are nicely related."—Bernie
"And they play like two separate games."—Phil

The object of *Dragonfire* is simple to understand, and the rules are easy to figure out. In the first screen, you must cross a bridge between two towers. Fireballs flash in your direction, both high and low, and you can duck or jump over them. You can also scurry inside the right-hand tower, a safe base where you cannot be hit.

Dragonfire's second screen—if you can get there—initially has you concealed in a hiding place at the lower right, which you may return to at any time. Spaced randomly around the screen are eight treasures. Your job is to reach them all. If you do, a door at the upper left opens, leading to the next screen (a repetition of screen one). A beautifully detailed dragon patrols the bottom of screen two. Whenever you leave the hiding place it zeroes in on your position, spewing a deadly stream of fireballs you must dodge. Be prepared to rely on your peripheral vision, because things happen very fast here.

Imagic has released a version of this game for Intellivision. In that version, graphics and gameplay are, if anything, even better.

WRAP-UP

BERNIE: The different action on the two screens is a big plus, and the speed of animation is exciting.

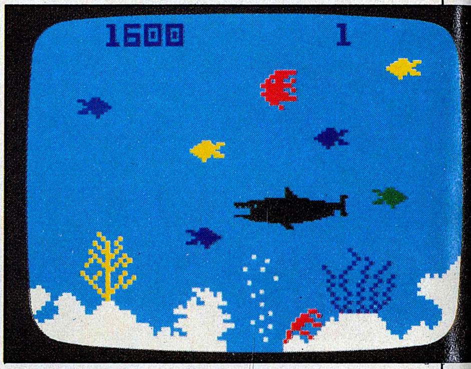
PHIL: You can get even more speed and control against the dragon by using a track-ball, but the track-ball doesn't work in crossing the bridge. I use the joystick for the first screen, then switch to the track ball.

BERNIE: That sounds like a pain.

PHIL: It is, but it doubles my score.

SHARK! SHARK!

(Mattel, Intellivision, $14–19)



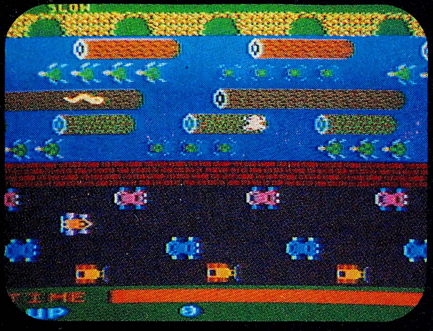
"I was hooked from the moment my fish began to grow on screen."—Phil
"The two-player version is great, because you can cooperate against the shark and other fish."—Bernie

You are a little fish in an ocean with lots of other creatures, and you have only one object—survival. The main rule is eat nothing larger than yourself—unless you are clever and fast enough to safely attack the shark.

By eating little fish, you gain points. For every 1000 points you gain, your fish grows one size. This is quite a challenge because you can eat bigger fish, worth more points, once you have grown a few sizes—but the larger you get, the harder it is to avoid enemies.

Your worst foes are giant jellyfish (you can never grow large enough to eat these) and the patrolling shark. Although the shark is quite

(Continued on page 16)



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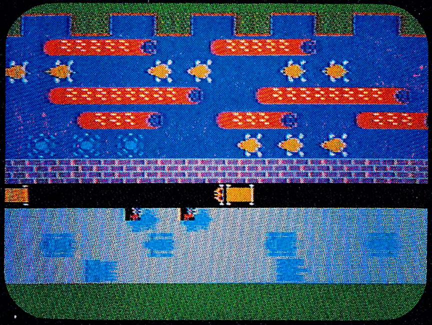
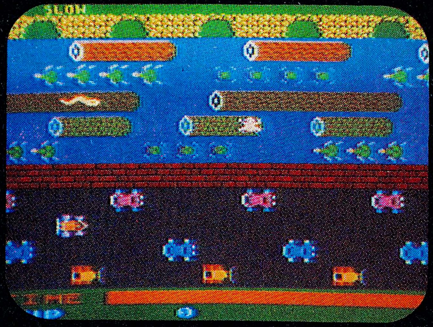
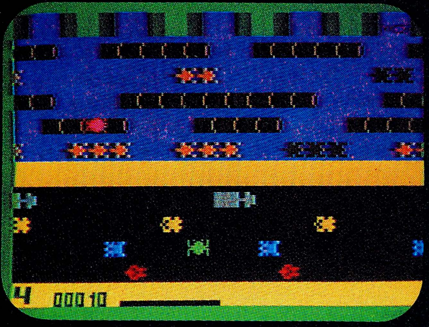


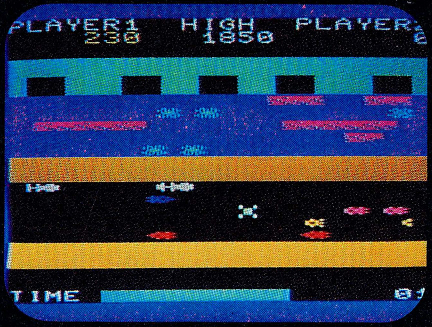
TI99/4A



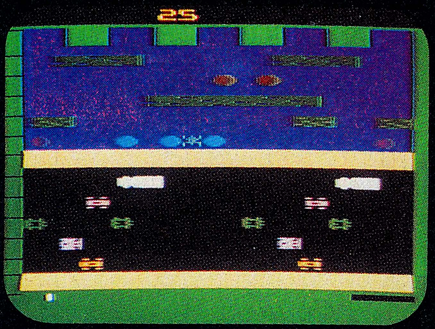
ATARI 400/800/600XL



INTELLIVISION



COMMODORE VIC 20



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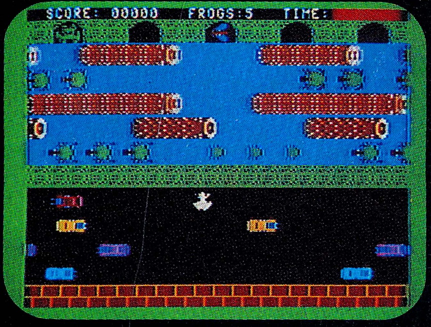
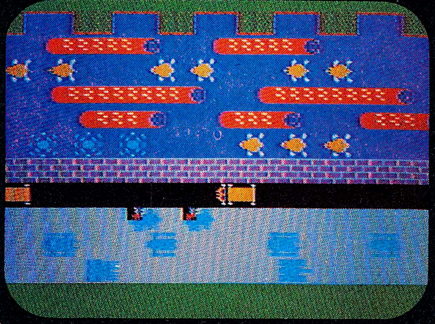
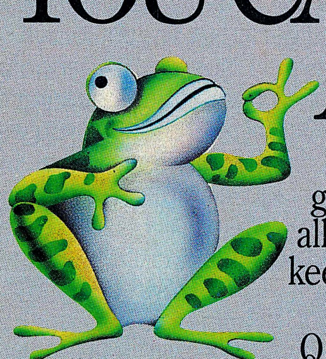


COMMODORE 64



COLECOVISION

8 WAYS YOU CAN PLAY FROGGER*™ AT YOUR PAD.



FROGGER is one of the all-time great award-winning home video games. And now Parker Brothers has programmed it into all the most popular video and computer formats so you can keep things hopping in your own home.

Catch Frogger along with POPEYE,® Q*bert,™ TUTANKHAM™ and SUPER COBRA™ where you buy your video and computer games. You'll find it absolutely ribbitting.

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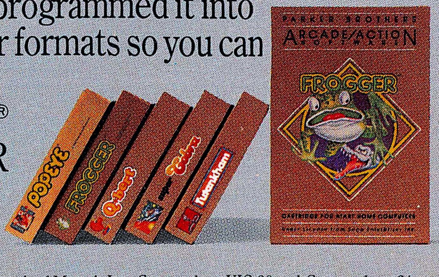

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(Continued from page 14)

large, he is not very smart. In fact, you can get away with nibbling on his tail if you are fast, which adds points and weakens the shark.

WRAP-UP

BERNIE: My biggest complaint is about control. You can stop moving with the action button: dart forward using any of the Intellivision's 12 keys; or move at regular speed in 16 directions using Mattel's sawed-off version of a joystick, the disc controller. But even after extensive play, you still don't feel you are swimming well.

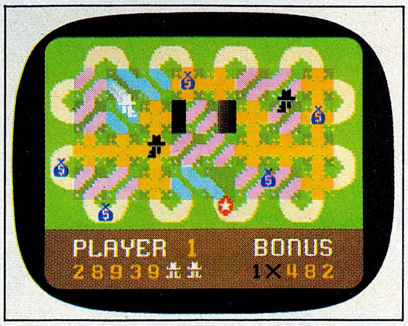
PHIL: I agree. The Intellivision disc controller isn't good and tends to mess up an otherwise enjoyable game. Pressing on the flat disc isn't as good as pushing a joystick.

BERNIE: But the concept is very good—a nice "discovery" game where intuition is as useful as rules.

◆◆◆

HAPPY TRAILS

(Activision, Intellivision, $34.95)



"I don't know how we can review this without mentioning the similarity to Locomotion."—Bernie
"Which Mattel licensed for Intellivision."—Phil

Now that we've tagged *Happy Trails* as a copycat, we must admit how much we both love this game. Without a doubt, it is one of the best cartridges for Intellivision, making the poor control device feel almost comfortable. (By the way, we discovered you can use either keys or the disc to move.)

Playing *Happy Trails* reminds us of playing with those plastic sliding block puzzles with 15 movable squares and blank a space. Each *Happy Trails* board consists of panels that you slide around. On the panels are sections of a trail. Your job is to maneuver the panels so your character—the good guy—has a continuous trail for chasing the bad guy. (Once the game begins, your character walks automatically, and if he reaches a dead end you lose one life).

The first board is small, a good introduction, with only three panels and a blank space. In each round, the board grows larger. The second board contains five panels, the third seven, and so on. How large does the board get? Frankly, we can't get past the eighth one with its 20 panels.

WRAP-UP

BERNIE: Each new board is a surprise and really leads you deeper into the problem of shuffling squares. It's abstract, yet logical.

PHIL: My only complaint is that the trails are sometimes hard to see.

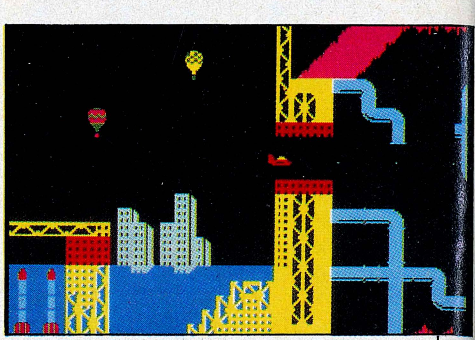
BERNIE: Yes. They made the trails different colors so you could easily tell where one panel ends and the next begins. Too bad they didn't make the panels different colors and leave the trails solid.

◆◆◆

LOOPING

(Coleco, ColecoVision, $30)

"Looping is a new kind of game that gives you a heightened experience of control on screen."
— Bernie
"The second screen, the pipes room, could carry the whole game by itself."—Phil



You need a strong stomach to play *Looping*, because at times you are required to perform some tricky acrobatic feats. The game consists of three screens, and you may stay in any screen as long as you like.

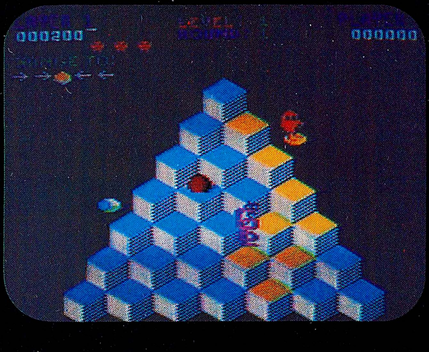
In the first screen, balloons are launched, and you get points for shooting them down. But your plane is constantly moving and the balloons may be launched behind you; that's where the "looping" idea comes in. By pulling back or pushing forward on your joystick you can make tight loops, figure eights, or barrel rolls that give you clear shots at the targets. It looks easy, but just try to keep your orientation while your plane spins all over the screen!

Once you've had your fill of balloons you can move into screen two. It's called the pipes room, and it's a maze of tubing. There is nothing to shoot here, but as long as you keep flying two things happen: your score keeps rising and you get to hear beautiful synthesized music. It's a dangerous and wonderful duet: hearing the peaceful music makes you want to fly around the pipes forever, but that requires highly accurate steering. You're bound to lose a life if you stay here too long.

WRAP-UP

PHIL: *Looping* is a very good adaptation of a coin-op that was never very popular.

(Continued on page 18)



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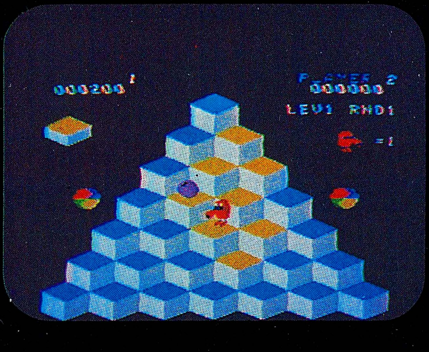
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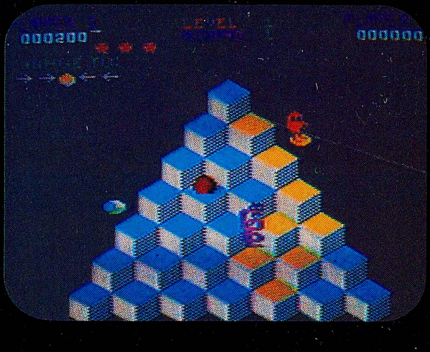

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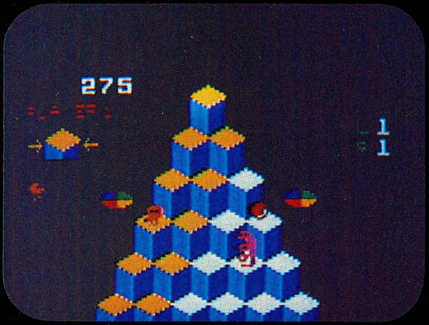
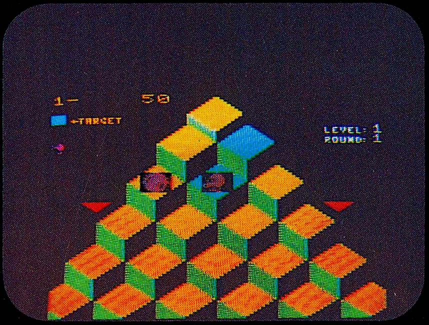


INTELLIVISION


1- 50
TARGET
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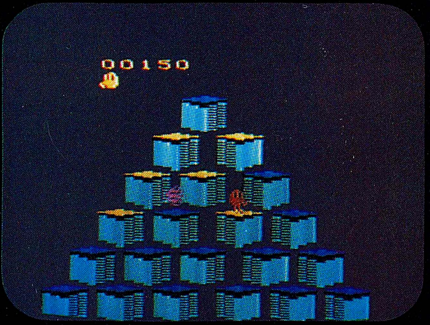
ROUND: 1

COMMODORE VIC 20



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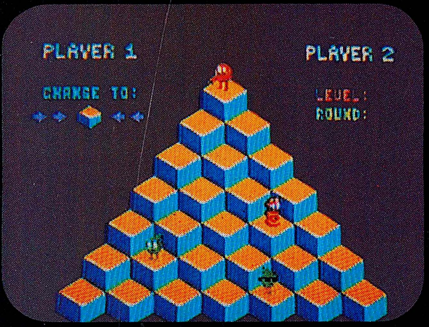
PLAYER 1
PLAYER 2
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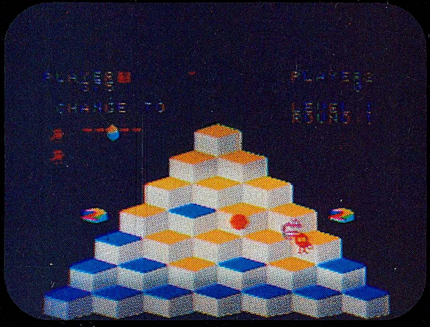
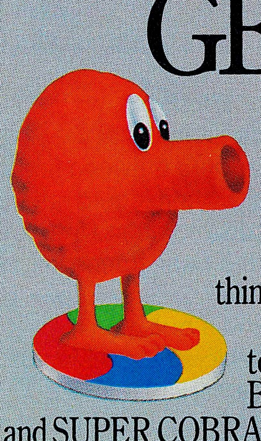
LEVEL:
ROUND:

COMMODORE 64



COLECOVISION

HOW TO GET Q*BERT™ OUT OF YOUR SYSTEM.



If you've been wanting to play Q*bert, but haven't been able to find it available for your home system, your time has come. Because now you can keep things hopping with any of these popular home video and computer formats.

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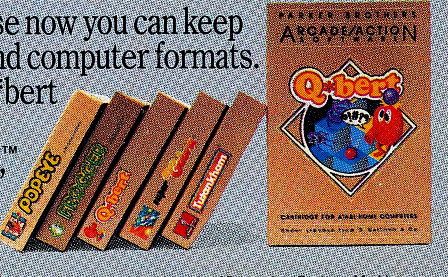
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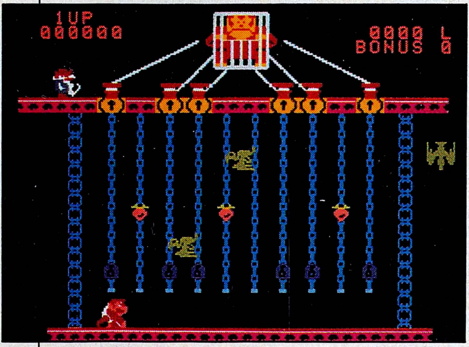
(Continued from page 16)

BERNIE: That's probably because the flying mechanism was so new that players felt it cost too many quarters to become proficient. Now, that's not a problem. I think *Looping* will please a lot of players in this cartridge form.

◆◆◆

DONKEY KONG, JR.

(Coleco, ColecoVision, $30)



"A game even more lovable than its predecessor."—Bernie
"The ape makes a better main character for this type of game than Mario."—Phil

Donkey Kong, Jr. is a series of three related scenes through which your character—this time a baby ape trying to rescue papa—must be maneuvered. Each screen is challenging, graphically detailed, and stuffed with strategic options.

At the start of a game, papa ape is caged in the top left corner of the screen. Your job is to reach a key near him that will unlock the cage and advance you to the next screen. Instead of *Donkey Kong*'s ladders and ramps, your little ape must climb vines and hop across obstacles to reach the top. The ape's movements are cute; he can shinny up a vine on either side, or use two vines—one in either hand. His knuckles scrape the ramps realistically as he walks across them.

In screen two there are a series of chains hanging from a ramp. Your object is to push keys up the chains and into their locks without meeting an evil snapjaw or the birds. (The birds fly an easily memorized pattern. Learn it.) The graphics keep the game exciting.

Screen three is called the springboard screen, because your first step is onto just that—a springboard. If you time your jump properly, you'll reach a shortcut; otherwise you'll end up in the water or on the useless, right-hand side of the screen.

WRAP-UP

BERNIE: Once you learn the object of the first screen—to place a key in a lock—you have a head start on the object of the other *two* screens, even without reading the rules. That's a nice feature. You understand what to look for and what to avoid.

PHIL: Yet the strategy for all three is different, particularly the second screen.

◆◆◆

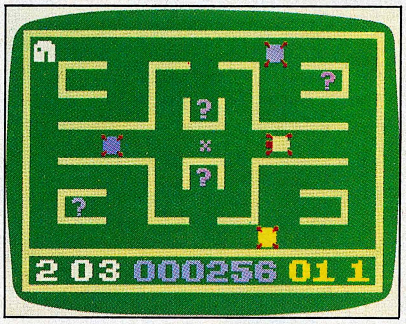
TURTLES

(N.A.P., Odyssey², $34.95)

"This first coin-up transformation for Odyssey² is dynamite in a brown paper wrapper."—Bernie
"Turtles *is good enough to make an Odyssey² owner gloat."*—Phil

This new, cute maze-chase game is one of the strongest challenges for Odyssey², despite the simple graphics and game concept.

In *Pac-Man* fashion, you move your turtle around the maze while avoiding contact with four beetles. At first, the beetles are blue and blind; only by accident will one



find you. But very soon they turn yellow, and will chase you on sight. And, shortly after that, the beetles turn red, which means they can even see around corners. By then, you had better be almost through the maze.

To clear a screen and move on to the next floor (skill level), you must visit the question marks in search of your baby turtles. Some of these marks stand for turtles, but one will be an extra beetle. There's no way to know which is which until you are there. Be prepared, when approaching any question mark, to make a run for it.

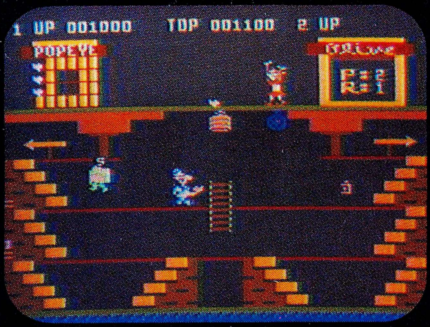
Although *Turtles* isn't an original concept—it's more a blending of ideas from other games—it adds one unique variation: bug bombs. The beetles are made temporarily harmless when they touch bombs, so you can turn around and move through them. This is the only tactic that can save you from being cornered. Without bombs, you would not survive this small maze very long.

WRAP-UP

BERNIE: It's a shame that the turtles climb the ladders between floors automatically. There could have been a second screen to the game, like the bear screen in *Carnival*. But I really like not knowing what's behind a question mark. That adds a nice surprise factor.

PHIL: The nursery-rhyme-like songs that introduce each level are

(Continued on page 94)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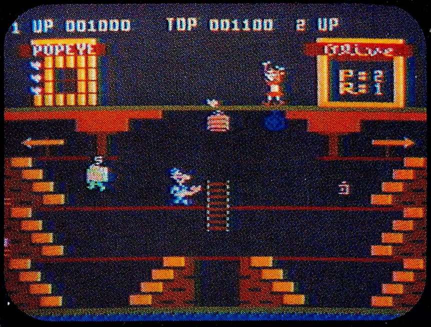
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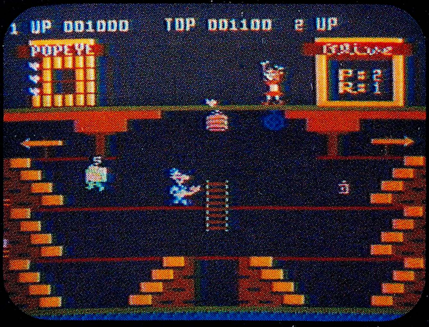
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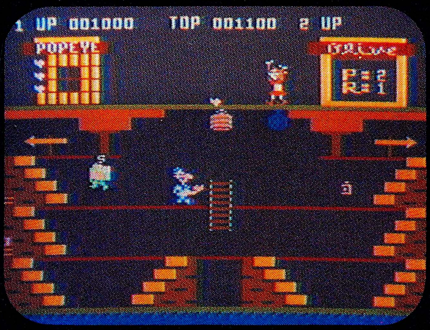
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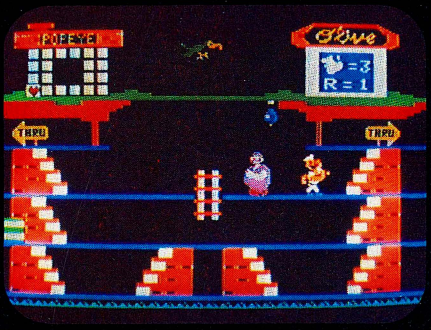
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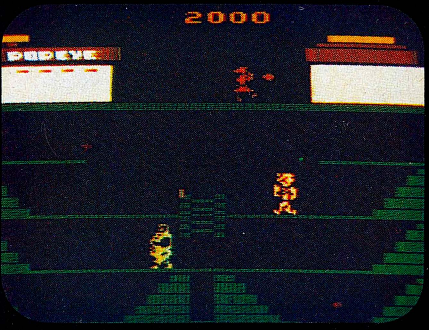
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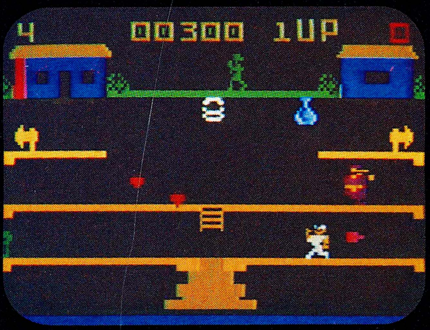

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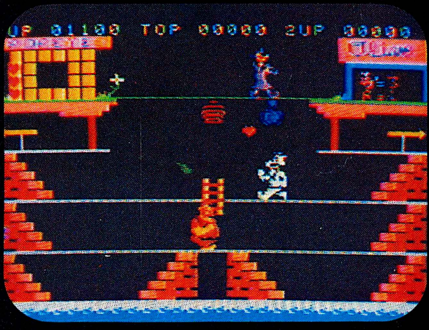
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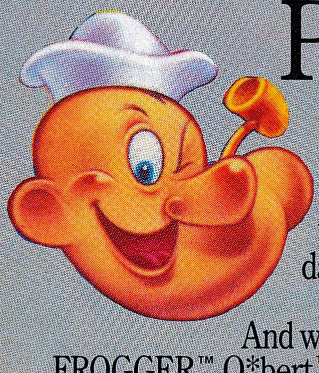

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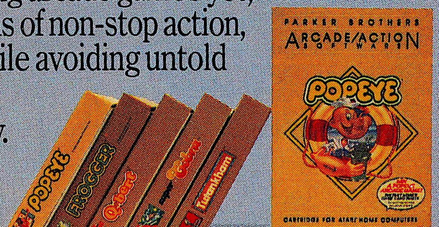
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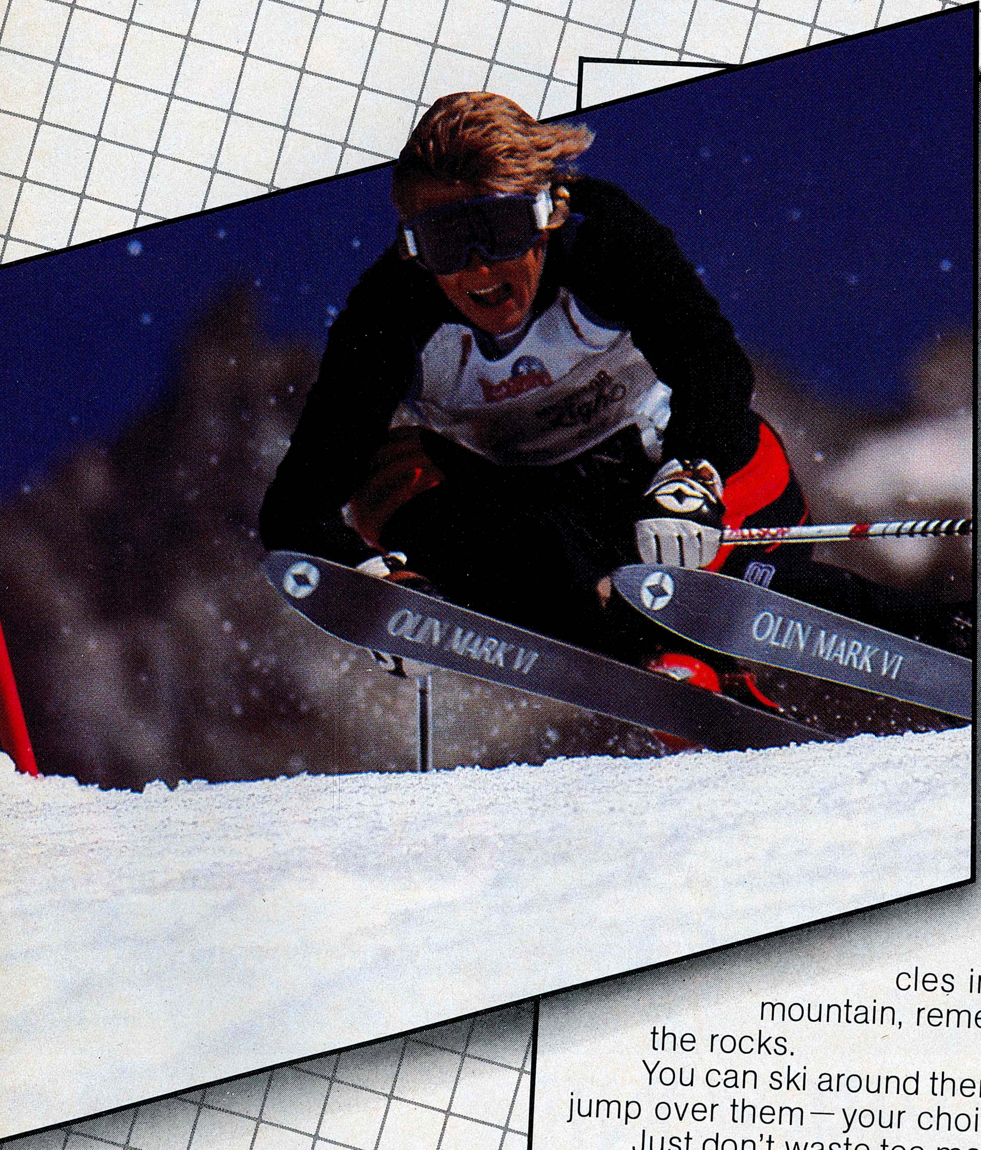
Racing



It's cold on top of the mountain. But the view is great and the people are pulling for you.

So you pull on your gloves, adjust your goggles, check your bindings, take a deep breath and you're off.

Now the clock is running, so you'd better concentrate on your technique. Get as close to the gates as you can, but not too close—contact with a slalom pole will cost you precious penalty seconds. Turn too sharply and you'll come to a stop.

And slalom poles aren't the only obstacles in your path. This is a mountain, remember, so look out for the rocks.

You can ski around them. Or jump over them—your choice.

Just don't waste too many tenths of a second trying to make up your mind!

Developed by Steven Sidley
Available on diskette for
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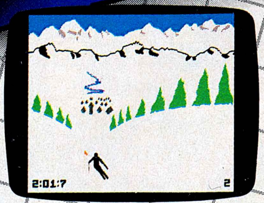

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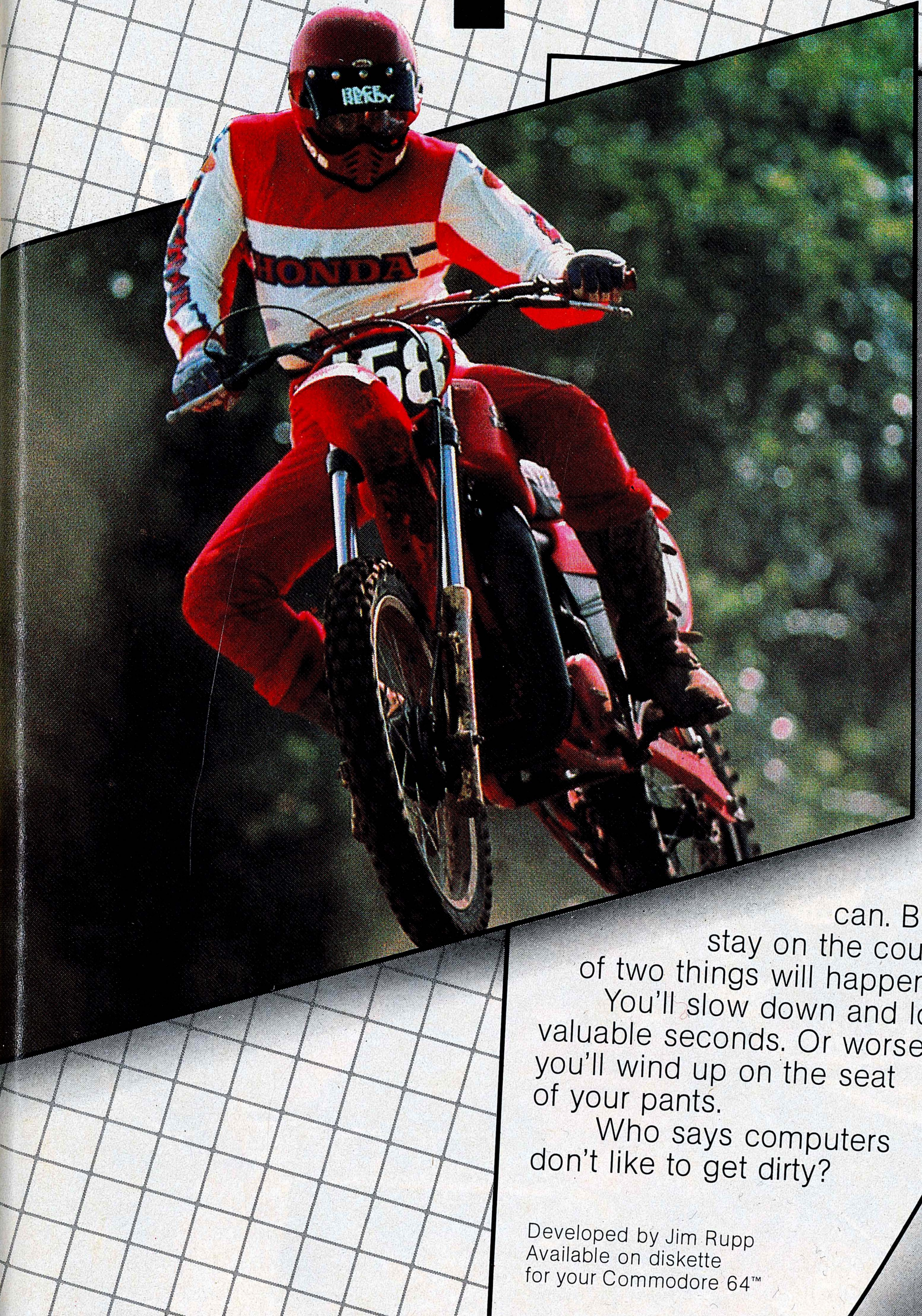

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Stay ahead if you can. But whatever you do, stay on the course. If you don't, one of two things will happen.

You'll slow down and lose valuable seconds. Or worse, you'll wind up on the seat of your pants.

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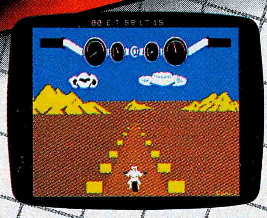

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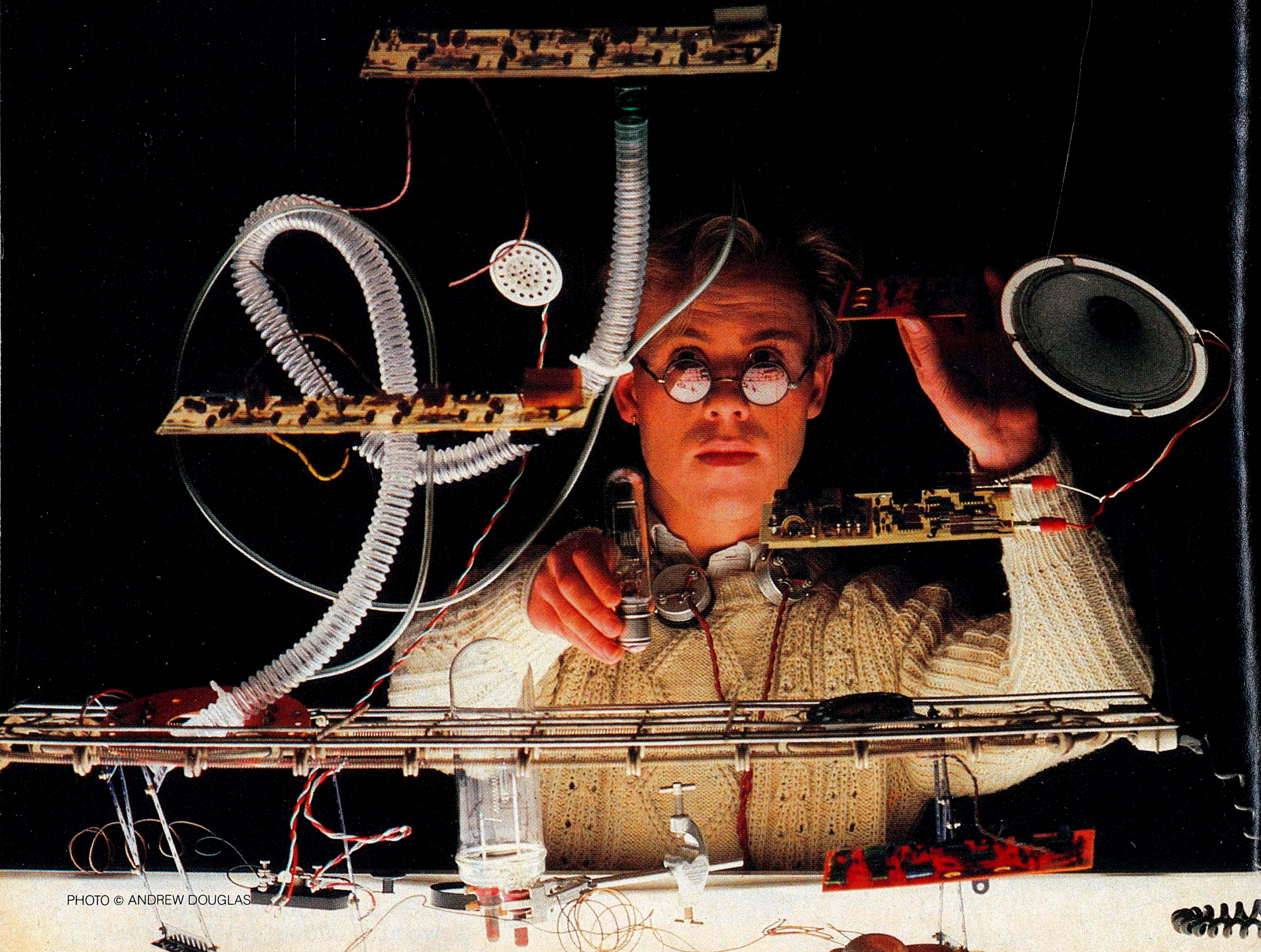
COMPUTER ROCK'S FIRST STAR

THOMAS DOLBY MAKES HIT MUSIC WITH THE SOUNDS OF SCIENCE

BY FREFF



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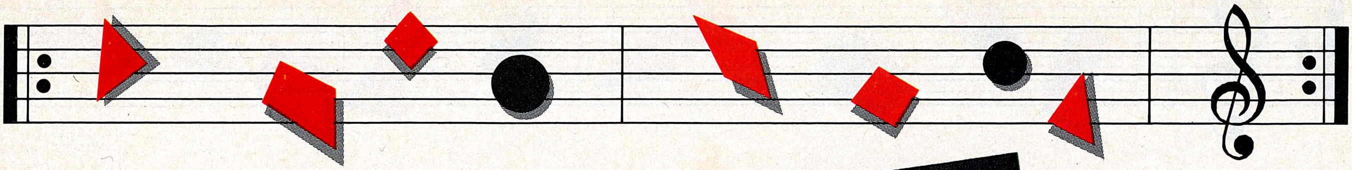


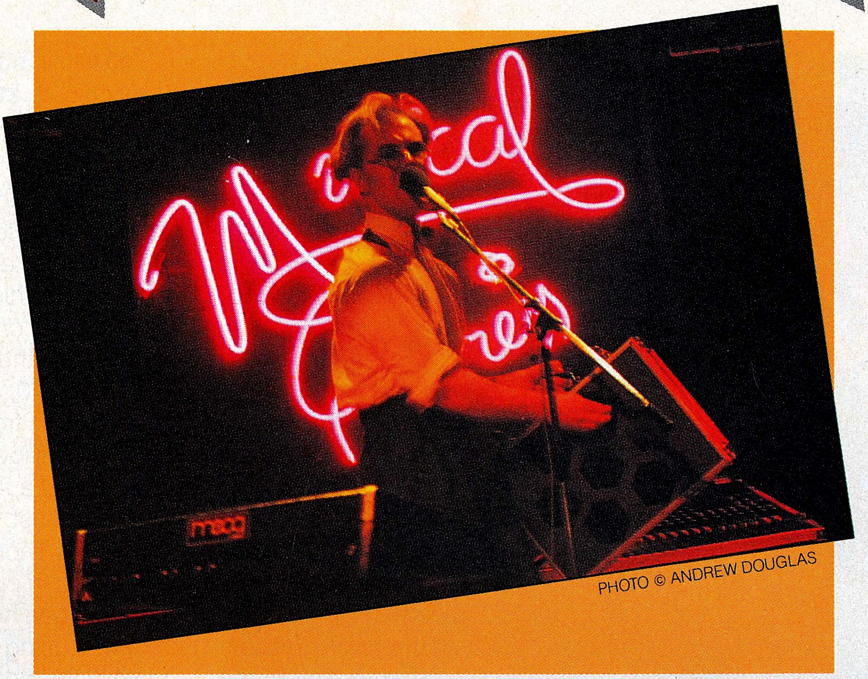


PHOTO © ANDREW DOUGLAS

Something exciting is happening in popular music. High technology—with computers— is changing and rearranging the sounds of music. At the forefront of this movement is a 24-year-old Englishman named Thomas Dolby, who has put fun into computerized music with eccentric, stylized pop tunes. In the process, Dolby has become the first real star of computer rock.

"I think he's tremendous," says Jim Monahan, musical director for WNEW-FM, one of America's premier rock radio stations. "He takes music a whole step beyond 'synthpop.' Dolby's songs are quirky, novel, and loaded with hooks. He's one of the few players today who makes his synthesizers work for him, instead of vice-versa."

To do that, Thomas Dolby uses computers—but in his own special way. To Thomas, a computer isn't a dull and colorless calculating box—it's a magic wand. Some computer and electronic musicians have been accused of playing mechanical music in which emotions don't matter. Thomas uses computers to make his music *more* human. In his new album, *The Flat Earth*, due out this month on Capitol Records, and on hit singles like "She Blinded Me with Science," he proves again and again that the only limit in computer music is the composer's imagination.

And Thomas has a *lot* of imagination—plus a wicked sense of humor.

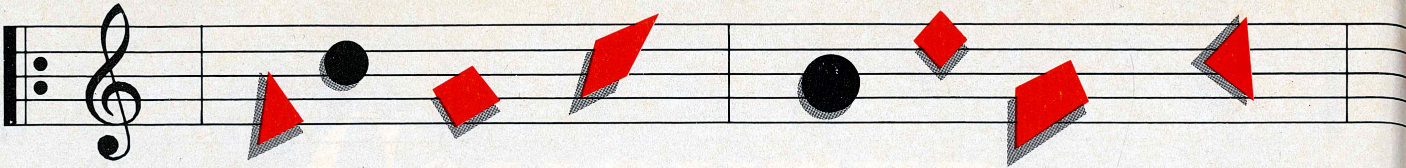
'SAMPLES' OF HIS MUSIC

Just look at how he uses a computer technique called "sampling." Sampling means using the computer to record natural sounds. It's just like using a tape recorder, except that the sound, instead of being saved on magnetic tape, is converted into numbers and stored in computer memory.

On the new album, Thomas has a song called "Mulu the Rainforest." It's about a part of Tasmania endangered by a government dam. For "Mulu," Thomas created a unique set of drum sounds by sampling real jungle noises and then changing them with his computers. One of the parts that now sounds like cymbals was originally the sound of crickets chirping!

For another tune, a special dance club single called "Get Out of My Mix," Thomas took two of his earlier songs and used the computer to break them up into musical fragments. He then put together the sounds in completely new ways. When the record is played, it's like a giant sonic jigsaw puzzle made up of dozens of pieces of two different songs.

Then—just for the fun of it—Thomas surprised singer Michael Jackson by creating a song that featured drum parts made up from Michael's *voice*, sampled off a recording of "Billy Jean." (Thomas and Michael have been trading tapes for some time now, as part of a long-term, long-distance collaboration.)



Dolby's music measured up on "The Golden Age of Wireless."

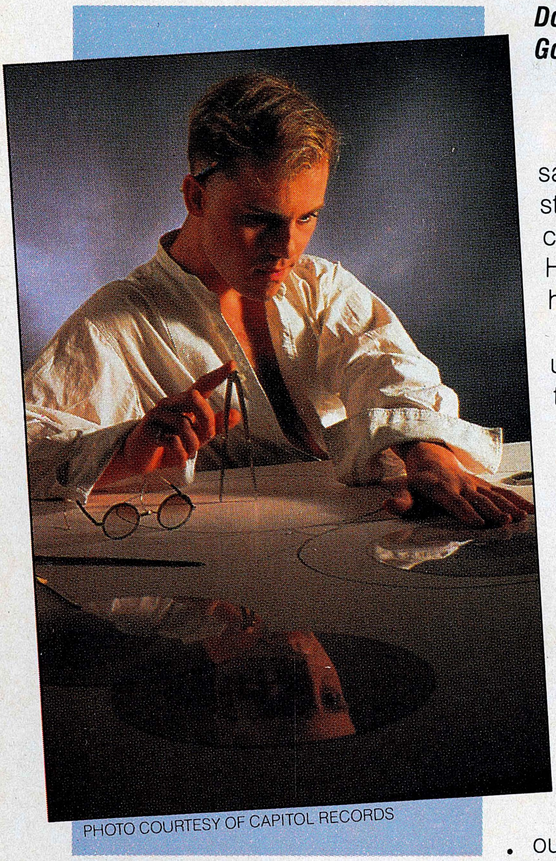


PHOTO COURTESY OF CAPITOL RECORDS

Dolby's computer transformed chirping crickets into cymbal sounds and jungle noises into mysterious drum beats.

Of course, Thomas explains, sampling doesn't *replace* actual instruments. It's just a way of using a computer to free the imagination. Here, Thomas tells how and when he uses sampling:

"If I want, say, a real violin part, I'll use a real violin—make no mistake about that. But it could be that what I hear in my head is a violin-*like* sound—one without certain kinds of violin-playing techniques or expression. So I'll bring in a violinist to lay down some notes on tape for me, which I'll sample into the computer. Then I can do whatever I want to—like get rid of the sound of the bow hitting the string, or loop certain sections so they repeat, or reverse them, or mix them with other sounds. Then I lay everything out on the keyboard attached to the computer, and play the chords and melodies of my choice."

NO, HE'S NOT 'THAT' DOLBY

Thomas isn't related to the Dolby who's famous for the "Dolby Stereo" at your local movie theater. His full name is Thomas Morgan Dolby Robertson, and he's the son of an English archaeologist. Thomas lived in different cities all over Europe while growing up, and spent much of his time tinkering with telescopes and ham radios when he wasn't studying guitar and jazz piano.

By his late teens, Thomas was recording his own songs at home. Soon after, he began to experiment with synthesizers. He played and toured with English rock and new wave acts like Lene Lovich and Joan Armatrading. His big break came when a "two week gig" to play synthesizers on the *Foreigner 4* album turned into three months of studio work. Soon after, Capitol/EMI Records signed him and he went on to record his first album, *The Golden Age of Wireless*. Three songs from the LP cracked the British top 40, and the album earned rave reviews from critics.

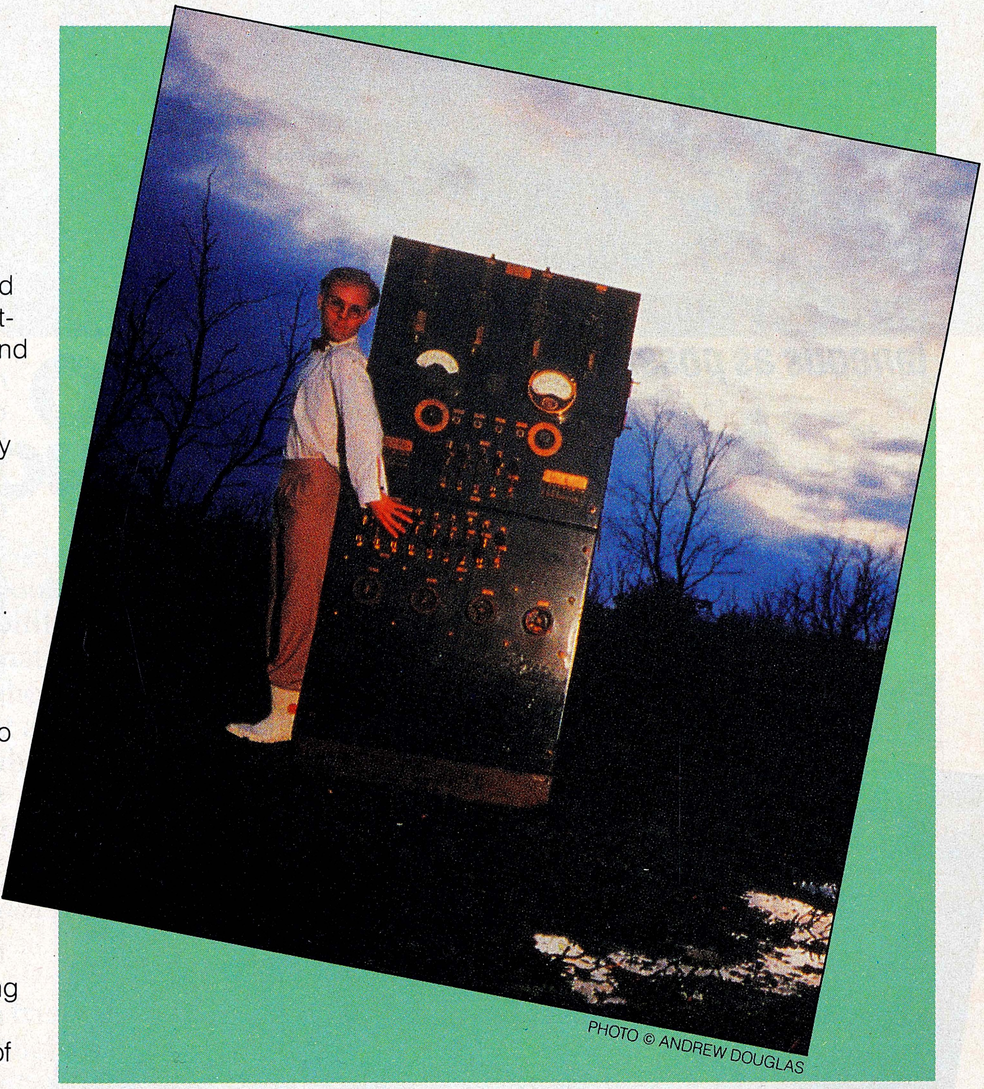
Given his love of gadgetry and his general aura of "apprentice mad scientist," it was almost inevitable that Thomas would become interested in computers. It happened when he was 21.

"I was using synthesizers as my main instruments, building up layer upon layer of sound with multi-track tape recorders," he recalls. "Then I discovered what computers were capable of doing. Since I'd always worked primarily on my own, the thought that I could use computers to make composition easier was *very* appealing. But electronic music was kind of a minority interest in pop in 1980—not like now. I knew the available software wasn't as good as it ought to be." With that in mind, Thomas began studying BASIC and investigating different computer music systems.

"I'd had no experience with computers at all," he says, smiling. "But typically, I went straight for the jugular once I got in." He put together his own musical system, a strange mix of many different devices. When it was finished, he affectionately named the system "Henry."

‘HENRY THE COMPUTER"

At the heart of Henry was a German-made computer called a PPG 340/380 Wave. This computer was originally designed to control light shows for Tangerine Dream (a pi-



Dolby got down to BASIC when he began using computers.

PHOTO © ANDREW DOUGLAS

oneer synthesizer band). Thomas bought a customized model that included a synthesizer. He then went to work on it, wiring it to the rest of his electronic keyboards and drum machines. The Wave computer now controlled the keyboards and drums. Suddenly, all kinds of new musical possibilities opened up.

For example: Thomas would play music on a keyboard. The computer would store the music in its memory. Then, by giving the computer different commands, the music could be edited and altered. Sounds could be substituted for one another. Tempos could be changed. Thomas could even make the computer send signals to the drum machines or to his stage lights, so they would pulse in time to his music.

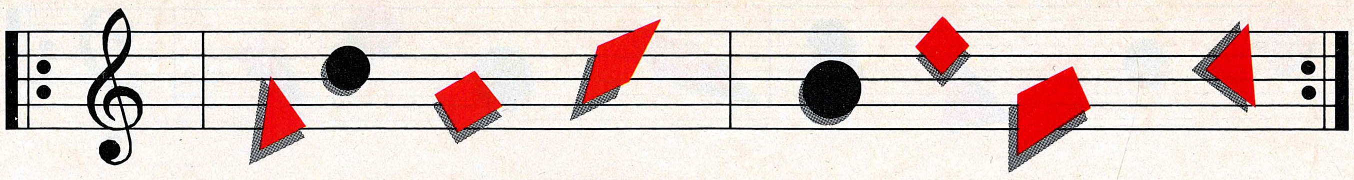
One effect Thomas used on *The Golden Age of Wireless* was to mix low piano notes with the tom-tom sounds being generated by his electronic drums. In the song "Cloudburst at Shingle Street," the piano was recorded on one track of tape and fed into a noise gate, which blocked the piano sound (that's why it's called a "gate"). Every time the Wave computer triggered the tom-tom beat, it sent a second control signal to the noise gate, which would open for a moment and let the piano sound through.

Henry was not without its share of headaches, however. It took a long time to make it do things, and its software wasn't very flexible. "Working with Henry was a bit of a fiddly kind of business," says Thomas. "Composing music has got to be spontaneous. If I have a musical idea, I don't want to have to spend two hours typing stuff into the computer before I finally hear it."

So, Thomas created a new system (which, naturally enough, he calls "Henry II"). The solution to making a computer more controllable? Obvious—control it with another computer! Just as the Wave ran all of Thomas's other keyboards, the Wave itself is now bossed by an Australian-made digital synthesizer called a Fairlight, which does the sound-sampling mentioned earlier.

With extensive rewriting of the software, Thomas and some of his friends managed to make the Ger-

Putting two computers together let Dolby create music more quickly—without spending two hours typing at a keyboard.



The computer changed Thomas Dolby's approach to his new album: 'It freed me…It enabled me to be as spontaneous as possible.'

man and Australian machines "talk" to each other. Now he can create complex sounds on the Wave and edit them more quickly by using the Fairlight's sophisticated commands. He can sample real sounds with the Fairlight, but use the Wave's superior filtering to alter and enrich their textures.

THE NEW LP

As his equipment has evolved, so have Thomas's thoughts about synthesizers. "My attitude towards the current album, and songs on it like 'Puppet Theatre,' is kind of post-electronic, even post-technological," he says. "The further I've gone with this digital gear, the more natural and organic the music has sounded. I think there's an awful lot more emotional 'feel' in my music than there used to be, because in some ways it's a lot more flawed and less regular."

His computers have also changed Thomas's approach to the new album's composition and arrangement. Instead of sitting at home by himself, endlessly going over a song and adding layer after layer, he did something new.

"I gathered three musicians—a guitarist, a bassist, and a percussionist—into a rehearsal studio. And then I set up my basic keyboard and drum machine parts on the computer, and had it play them for me. It *freed* me. I could stand there, pace around the floor, make suggestions in the guitarist's ear, wander up to a microphone and sing a bit of melody as it occurred to me. It enabled me to be as spontaneous as possible and get the adrenalin flowing, get myself excited, and thereby come up with the goods."

The "goods," as Thomas puts it, are songs. Dolby's songs, at their best, combine human spirit and computer precision and make them into something new.

"See, if a part is boring, it should be played by a machine," he says. "And if a part requires a lot of spontaneity and expression, then it should *not* be played by a machine." What can computers do for popular music? Thomas pauses, then says: "Computers give musicians room to be better musicians, to be creative."

FREFF is a writer, musician, and computer enthusiast who writes frequently about music and electronics.

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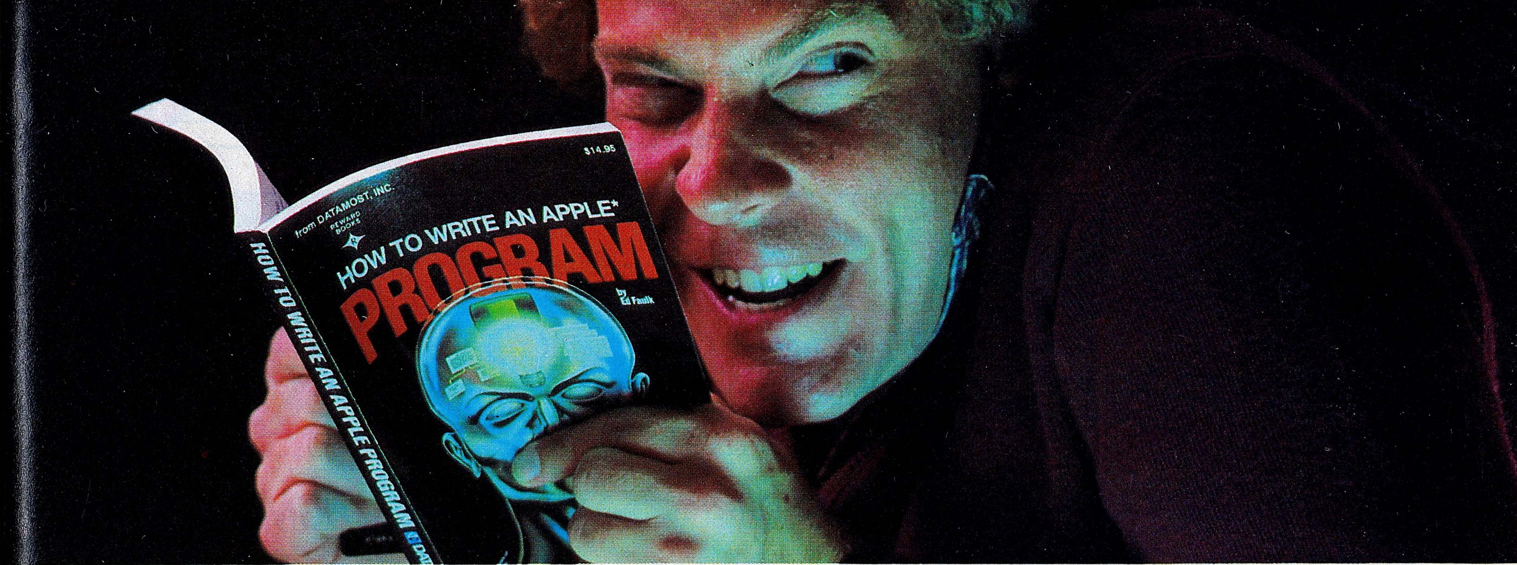
Insight about technology adds life to Dolby's new music.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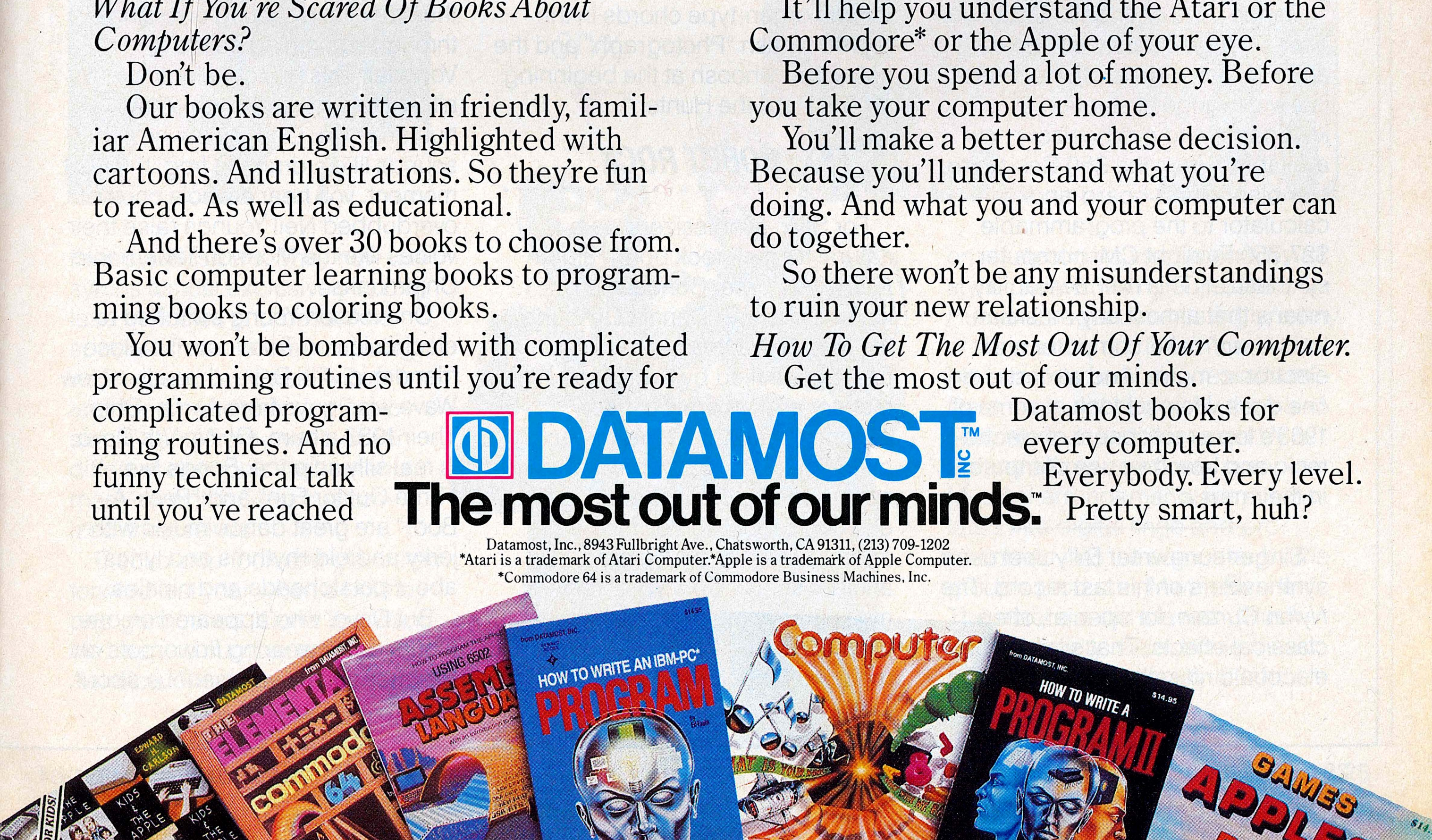
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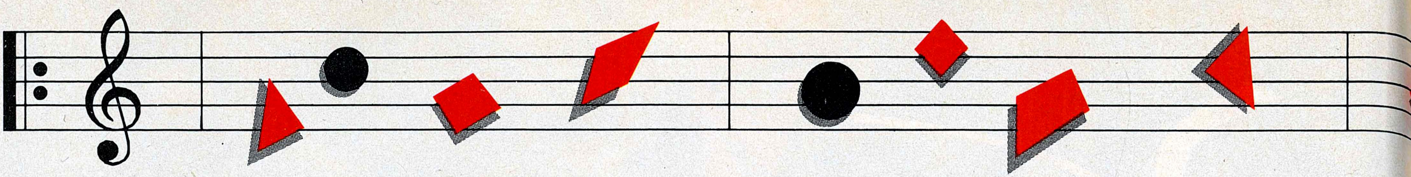


ELECTRONIC LP'S

1983's SYNTHESIZED, COMPUTERIZED ROCK ALBUMS

BY DAVID FRICKE

Electronic music used to be boring. Ask any older brother or sister who had to suffer through a 20th century music course in college. They'll tell you about weird records by nutty professors who flicked switches on primitive synthesizers that looked like Dr. Frankenstein's idea of a coffee machine. What came out of these contraptions were dreary, tuneless works that sounded like a '57 Cadillac desperately in need of a new muffler.

Things have changed. Today, you hear electronic music on Top 40 and FM rock radio stations. There is a wide range of electronic keyboards and synthesizers now available—from the $50 Casiotone combination keyboard-and-calculator to the programmable $27,750 Fairlight CMI computer synthesizer. This new availability means that almost any musician today can make computer and electronic music. And almost everyone does. Here's a look at some of 1983's top practitioners of electro-rock, and how they use computers in their music.

Singer-songwriter Billy Joel used synthesizers on his last record, *The Nylon Curtain*, for special, often classical effects. That spooky electronic riff in the hit "Pressure" may remind you of Johann Sebastian Bach tiptoeing through a haunted house.

Top rockers Journey often sneak in synthesizers to fatten up their guitar sound. Even young heavy-metal bruisers Def Leppard hid a Fairlight CMI synthesizer among the screaming guitars on their hit album *Pyromania*. Don't feel bad if you can't always figure out where. The Fairlight is a computer keyboard into which you can program a wide variety of sounds. It created the church organ-type chords in the Top 40 smash "Photograph" and the helicopter whoosh at the beginning of "Die Hard the Hunter."

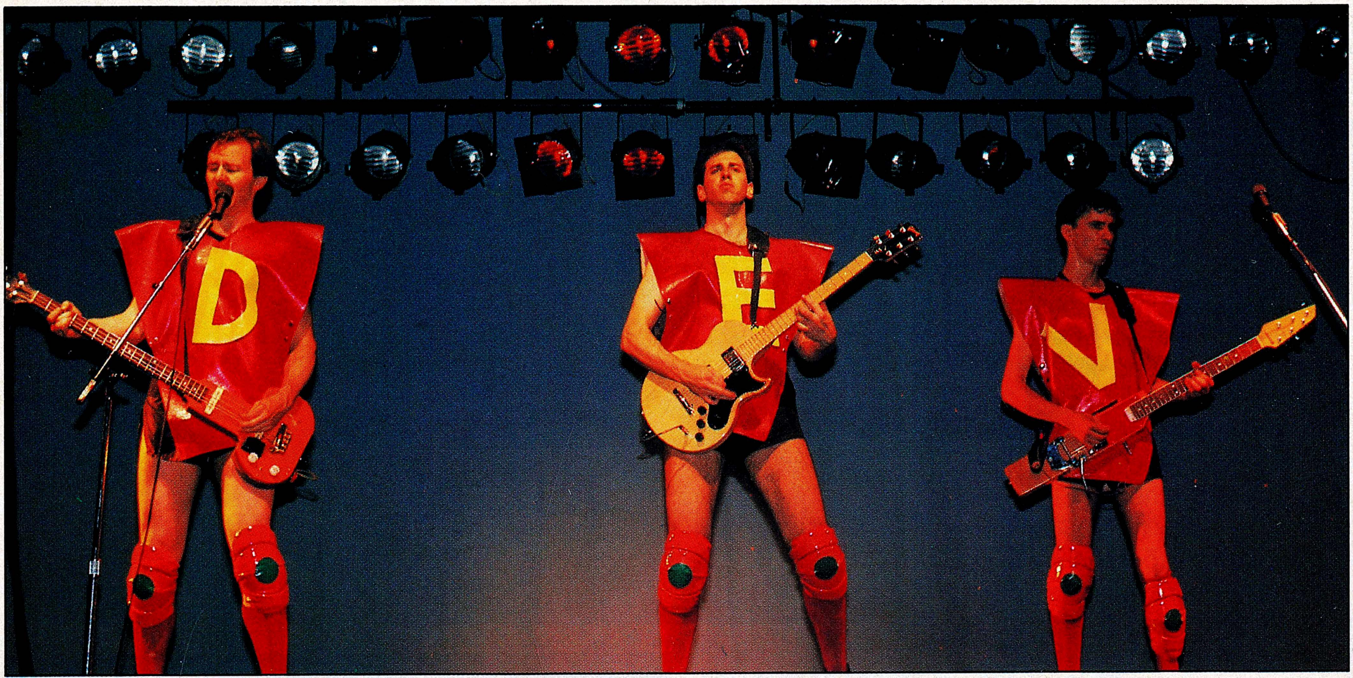
STYX: ROBOT ROCK

For Styx, synthesizers were a natural for their rock opera album *Kilroy Was Here*. Conceived by keyboard player Dennis DeYoung, the record is a freaky peek at a future controlled by a religious dictator and an army of nasty Japanese C3PO's. DeYoung and guitarist Tommy Shaw programmed space-age keyboards and created electronic robot voices for the android anthem "Mr. Roboto." On another song, "Cold War," they mixed heavy metal and mechanical disco, keeping time on a rhythm machine that played handclaps.

One of electronic rock's biggest surprises was the entry of Neil Young. Young is famous for hippie cowboy love songs, but this year's album *Trans* may be the boogie-woogie of the future. On catchy robot ditties like "Computer Age" and "Transformer Man," Young plugs in space-age keyboards like the Synclavier digital synthesizer where he once used to have guitars. *Trans*'s drum sounds came from a programmable LinnDrum computer. As if that's not enough to take him to the outer limits, Young also sings through something called a Vocoder. This gadget electronically alters the tone and pitch of the human voice. One minute he sounds like a drunken frog; the next moment, you hear a whole choir of overdubbed Neil Youngs raise their voices like the Mormon Tabernacle Chipmunks.

One reason Young switched to electronics on *Trans* was his close friendship with Devo, those five New Wave wise guys from Akron, Ohio. Their 1983 album, *Oh No! It's Devo*, is real silly science. Songs like "Time Out for Fun" and "Peek-A-Boo!" are great dance music with jerky android rhythms and lyrics about potatoheads and ninnies.

But Devo, who appeared on one album cover wearing flowerpots on their heads, are very serious about



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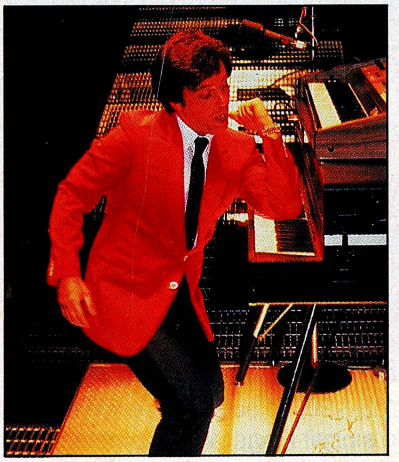

PHOTO © STEVE JOESTER/STAR FILE PHOTOS

▲

DEVO

HUMAN LEAGUE ►

◄ *BILLY JOEL*

STYX

▼

PHOTO © BBC/RETNA

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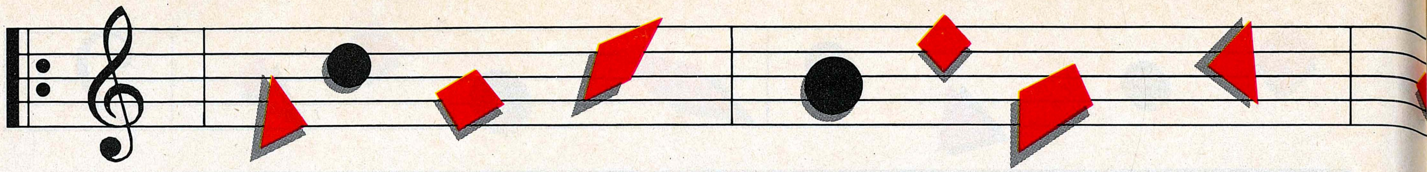
their synthesizers. They now use synths almost exclusively to play lead melodies and bass. And special effects like the dripping-water sound on "Peek-A-Boo!" and the air-raid siren in "Explosions" come from over a dozen different electronic instruments, many of which Devo customized themselves.

Electro-pop took one giant step forward last year when a bouncy pop gem called "Don't You Want Me" went to number one in America. This tune was performed on all-electronic instruments by a stylish new British group called the Human League. Interestingly, many of the sounds on "Don't You Want Me" and Human League's album, *Dare*, were not played by the band. They were, in fact, triggered by a Roland Micro-composer computer. Musical arrangements were translated into digital lingo and programmed into the computer by the group's producer, Martin Rushent. The machine did the rest. (Rushent's specialty is electronic music; he has produced many hits for



other English synth-pop groups.)

SYNTH BANDS

The League's success launched a whole new British Invasion of popular synthesizer bands like Duran Duran, Soft Cell and A Flock of Seagulls. The Gulls' music mixes synthesizers with guitar and drums for wild background effects. On their two albums, *A Flock of Seagulls* and *Listen*, these hip birds rely on only two pieces. One is a Korg MS-10 synthesizer; the second is a "string machine" (a keyboard that nearly replaces the entire New York Philharmonic string section with a few transistors). Played by Mike Score, whose blond hair hangs over his face all the way to his chin, these instruments decorated the cool snap of Seagull's modern dance songs.

Soul star Stevie Wonder was making dance music with electronic instruments when the men of A Flock of Seagulls were still squawking schoolboys. His classic 1972 single, "Superstition," featured the clavinet, a kind of electric harpsichord with a clunky hammering sound. More recently, Wonder has graduated to the Emulator. This unusual synthesizer is capable of imitating (or *emulating*—get it?) many different natural and mechanical sounds, not just instruments.

Meanwhile, electronic pioneers Pink Floyd have actually pulled back from synthesizers since keyboard player Rick Wright left the group late last year. All the members of the group played synthesizers. But it was Wright who created the scary desert wind effects on the *Animals* album and the strange factory clang of "Welcome to the Machine" on *Wish You Were Here*. On *The Wall* and the latest album, *The Final Cut*, leader and singer Roger Waters has replaced Wright's synthesizer work with classical-style piano and violins.

PHOTO © ROSS MARINO

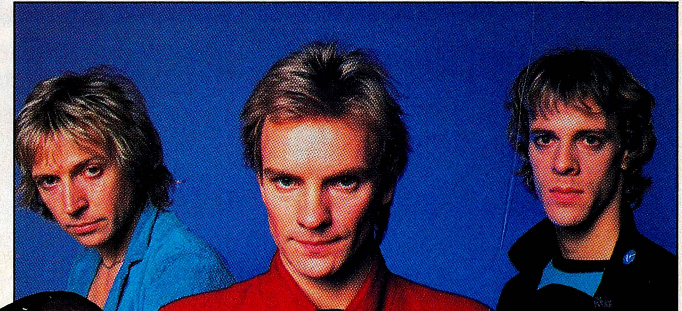


PHOTO © LYNN GOLDSMITH/LGI

▲
A FLOCK OF SEAGULLS

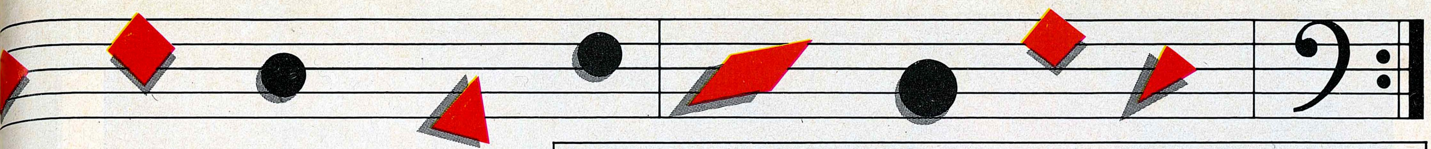
POLICE ▶

STEVIE WONDER
▼

PHOTO © ROSS MARINO

THE POLICE: SYNTH COPS

When it comes to synthesizers, the Police are real clever coppers. No artsy beeping or squawking oscillators for these cool New Wave blonds. But listen closely to the group's last two albums, *Ghost in the Machine* and *Synchronicity*. There are some very neat electronic tricks on those records. The real trick is that they don't always *sound* electronic.



"Walking in Your Footsteps" (on *Synchronicity*) is a ballad with strange jungle noises in the background and what sounds like an African talking drum sound. That "drum" is actually Police lead singer-bassist Sting fiddling with an Oberheim OB-Xa synthesizer and DSX sequencer. He simply fed a few different synth riffs into the sequencer and arranged them into an exotic rhythm. Next, he added a layer of drum sounds. Sting says he wrote the hit "Spirits in the Material World" on a little Casio keyboard while riding in the back of a truck. And, in his spare time, he's been programming Vaughan Williams' Sixth Symphony into the Oberheim.

You think that's weird? A lot of the synthesizer effects you hear on Police records are actually guitarist Andy Summers plugging into his Roland GR-303 guitar synthesizer. Summers has one wild effect that doesn't use a synthesizer at all—just two simple electronic gadgets. By setting his echoplex and compressor at the right spots, he gets what he calls "the wobbly cloud." You can hear it (it's impossible to *describe*) on *Synchronicity* in the song "Tea in the Sahara."

The hottest sounds of 1982-83's electro-pop scene came from a young Englishman, Thomas Dolby. Dolby's hit single was called "She Blinded Me With Science (She Hit Me with Technology)." In fact, Dolby—along with many other rock stars—is making use of science and technology to create new sounds and new horizons in popular music.

If you have access to a computer, you can be an electronic musician, too! To find out how, turn to page 50 and read "Rock Around the Block."

DAVID FRICKE is a freelance writer who specializes in music.

WHAT'S A SYNTHESIZER?

With all this talk about high-tech music, you may be a little confused by some of the words. But these music makers are only instruments with a few extra wires and knobs. Well, maybe they're a little more complicated than that. But they *are* instruments.

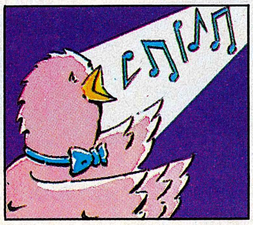
A *synthesizer* is an electronic machine that creates sound—usually music. Most synths look like pint-sized pianos. But you can't get sound by just plunking, strumming or tapping a synthesizer. You have to play with controls, turn knobs, and experiment with settings to get the sound you want.

How do synths work? Well, all sound is made up of sound waves. A synthesizer plays with the shape of these waves to create new sounds. The sound wave begins as an electric signal and travels through a wire as current until it reaches a speaker. There, it's translated into sound. The beauty of a synthesizer is that it can create sounds that you don't normally hear in nature.

Some synthesizers use computers, but many do not. The *analog synthesizer,* for example, creates sound and modifies it without any computer connection.

A *vocoder* (voice coder) is another kind of synthesizer. When you speak into a vocoder, it actually combines your voice with waves that come from a synthesizer-generated sound. When you speak, it's as if you've been taken over by another voice. To many people, it sounds like a robot talking.

A *drum machine* is also a synthesizer. But rather than produce musical notes, it generates a beat, or rhythm pattern. A drum machine in the background of a tune lets a real drummer play freestyle, without worrying about the constant beat a song may require.



A digital *synthesizer* has all the music-making abilities of an analog synthesizer, and more. It actually "calculates" a sound, converting the shape of the sound wave into numbers. The digital synth, which *contains* a computer, assigns 0's and 1's to parts of the wave.

The 0's and 1's go through a digital-to-analog converter, which turns them into an electric signal. You can then store the list of numbers that describe the sound wave. Later, you can call back the numbers, send them through a digital-to-analog converter, and recreate the sound.

Digital synths also 'sample' sound—that is, record natural sounds, then break them apart. With this process, you can even transform the singing of birds into Beethoven's ninth symphony! *—Patricia Berry*

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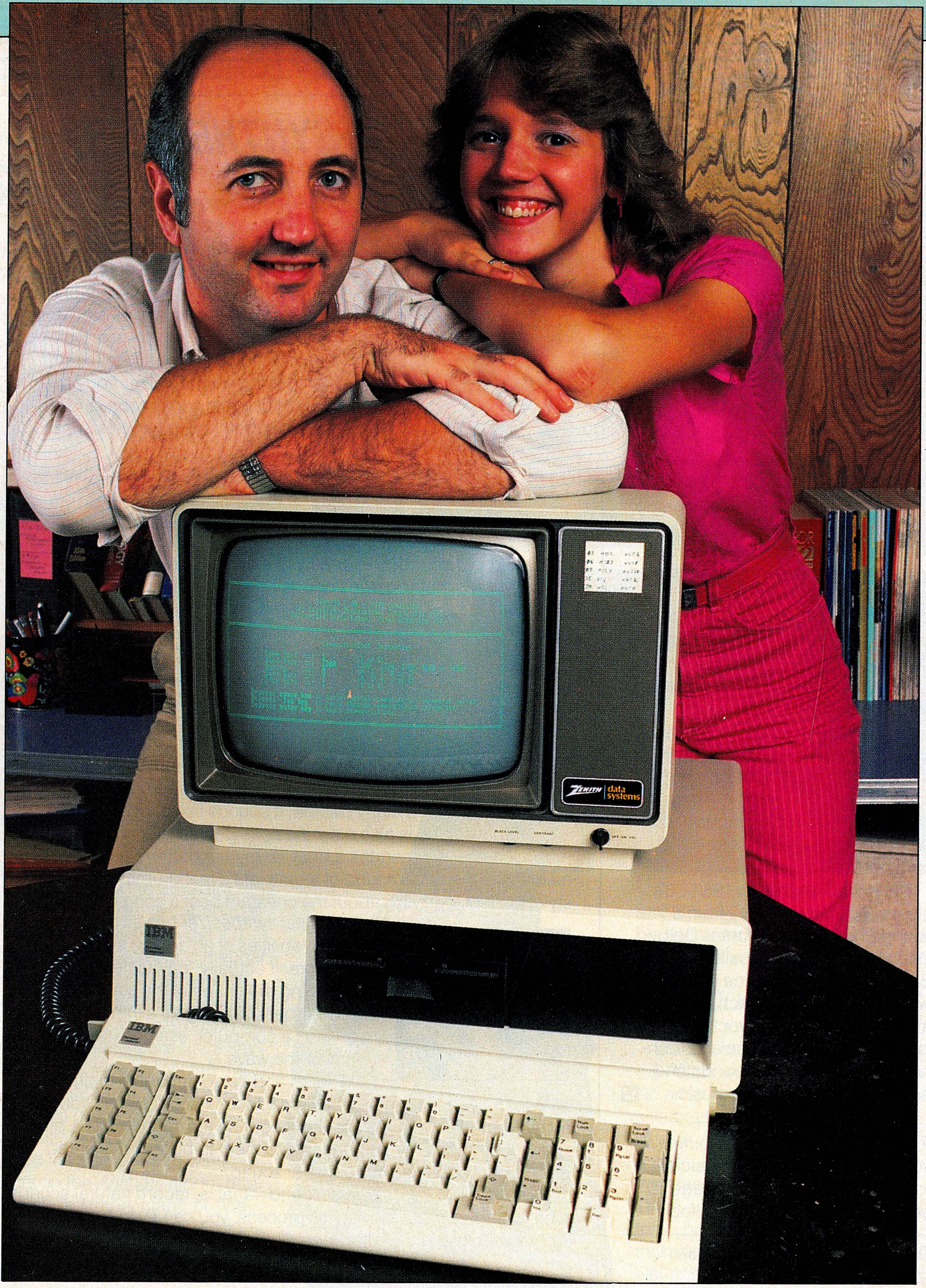

ZENITH data systems
IBM

PHOTOS © DEBORAH FEINGOLD

MY DAD'S A COMPUTER COMMUTER

Denise LeClair, 15, lives in the quiet little town of Colchester, Connecticut. Colchester looks like the sort of place where nothing unusual ever happens, and Denise seems like an ordinary teen—she loves talking on the phone and listening to music.

But in their house, set far back from the road on the edge of town, Denise and her family are leading a futuristic life centered around their home computer. Denise's father, Dave, is a *telecommuter.* He goes to his office at Aetna Life Insurance only about two days each week. The rest of the time he visits headquarters through an IBM personal computer in the LeClairs' family room. He can read his mail, communicate with his co-workers, write reports, order copies, hold meetings—do just about anything he could do in the office—without ever leaving home.

Before Denise's family got their personal computer connection, her father did what most workers do now: he drove to and from the office every day. He left home at 8 A.M. and Denise didn't see him until 7 P.M. or later. A few years ago, her father started taking a personal computer home with him each night to finish up assignments. Eventually, the computer settled into the LeClair home permanently.

And then, with Aetna's permission, Denise's dad began using it during the day as well as at night. As a result, family life has changed a great deal in the LeClair home.

Today, Denise's father's work and the family exist side by side in the LeClairs' L-shaped basement family room. Family things—TV, stereo, video-tape machine—take up the long part of the L. In the short part, behind the sofa, are the computer and shelves full of Denise's dad's business computer programs and

ON-LINE LIFE WITH FATHER

BY KAREN SCHWARZ

files. This is where her father works, talking over telephone lines to Aetna's main computer 50 miles away.

Denise is the only student in her school with a father who telecommutes. But soon, many families will have telecommuting parents. By 1993, five million Americans will "go to work" by stepping up to their home computers and pushing a button, according to the University of Southern California Center for Future Research.

HOW THE COMPUTER CHANGED DENISE'S LIFE

But right now, living with a telecommuting dad has made Denise's life different from her friends'. In some ways, it has made the LeClairs closer, but it has also been a strain. Denise isn't sure whether it has made her life easier or harder.

For instance, she is the only one of her crowd whose dad is home when she comes in after school. "Some say, 'You're lucky to have your dad home,'" Denise says. "Then others say, 'You really have to put up with a lot of things. Do you really *want* your dad home?'"

In fact, Denise says she has enjoyed having her father around more. She and her father are getting to know each other better over after-school snacks. "It always used to be Mom. Mom knew everything I did at school, not Dad," says Denise. "Now it's both of them. He seems to really enjoy my talking to him. He knows more about me, and I think he enjoys listening to me. It's also good for me to get a different parent's point of view."

> ***'Living with a telecommuting dad has changed Denise's life in good—and bad—ways."***

There are times, though, when everyone needs to be alone. Adjusting to this part of telecommuting was quite a challenge, Denise says. "It bothered me when my father first started staying at home. I thought, 'My God, he's there. What am I going to do?' I can't talk on the phone now. I used to raid the refrigerator when I came home. I wanted to turn up the stereo. Now I think twice about these things.

"When my boyfriend and I had an argument, I just wanted to throw a pillow at the wall. You can't do that with Dad sitting right downstairs. So, I started taking long walks. There's a trail near the house and I used to go there and scream in the woods. One time I was gone for 2½ hours and my mother came looking for me.

"When I'm mad or upset now, I just leave the house and talk to myself. It's the only way I can be alone. That was a big change, but it's okay now. You get used to it and you also begin to enjoy it. It's nice to have someone to come home to and to talk with, instead of just calling your friends."

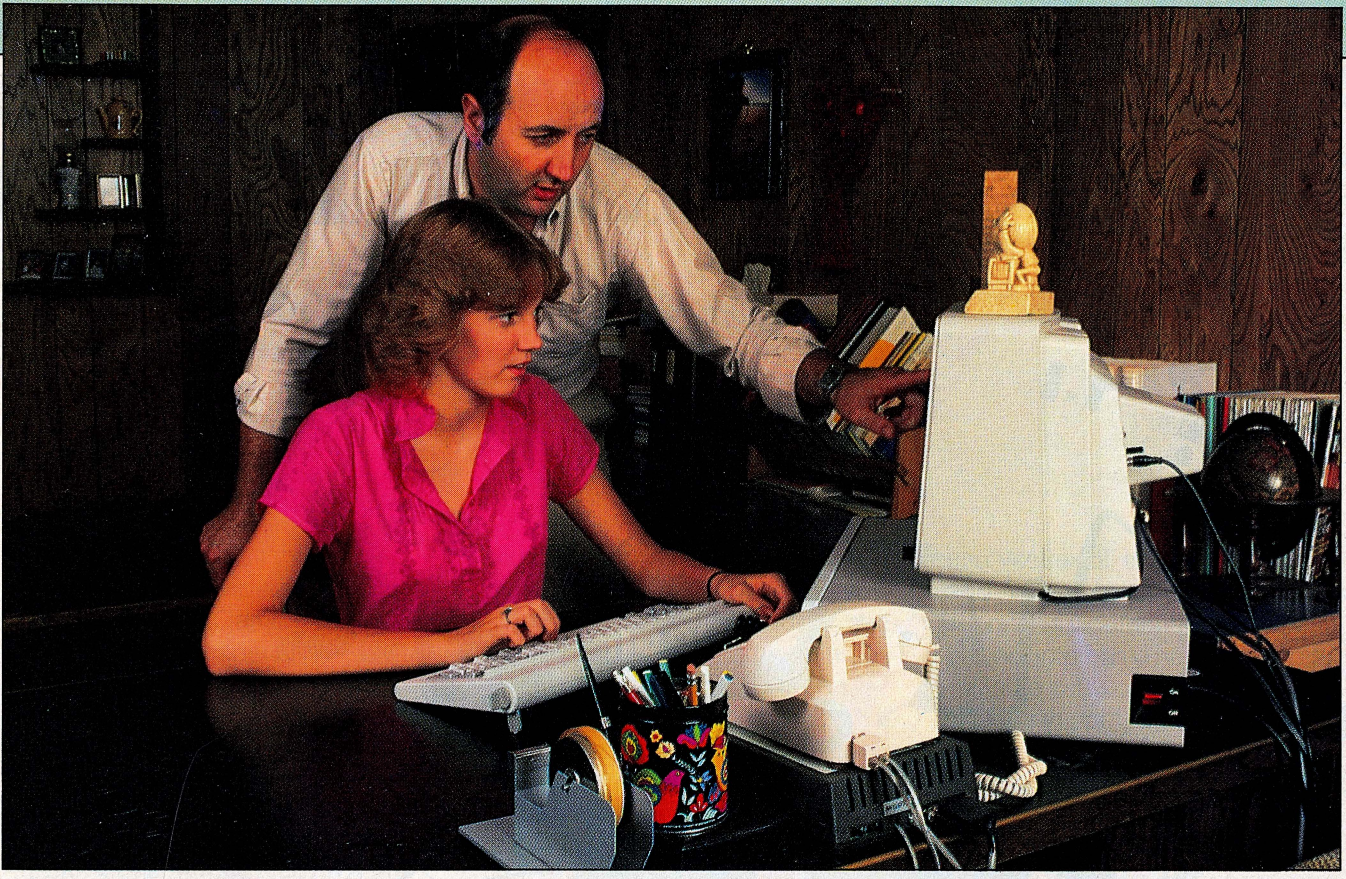
Telecommuting at the LeClairs' still creates problems. A few times Dave has been called to the computer when Aetna needed him in the middle of the night. Other times, he's had to go to the computer just as he was about to go out for the evening. These incidents, Denise says, make her resent the computer. It makes her feel as though Aetna has moved into their home. "It's like somebody is there watching over us. Sometimes we want to do something together and the computer gets in the way. On my parents' anniversary last winter, my sister, my brother and I gave them some money to go to dinner and the movies. But the signal went off and my father had to get on the computer. I was really upset. Times like that make me feel jealous that the computer is there and Dad has got to pay so much attention to it."

At the same time, though, the computer hasn't taken command of the family room. Denise's father found that he can work while someone watches a movie or listens to the stereo. But problems do arise when Dave has to concentrate very hard on what he's doing.

"Sometimes he yells at us," says Denise. "He'll tell us to get away and leave him alone. It makes me want to yell at him to leave the computer alone and talk with us. It's frustrating. He's there but yet he's not there. But, in the end, I always say I'm sorry. I don't really feel the computer is all that bad. And later my dad usually comes around and says, 'I'm sorry,' too."

THERE ARE ALSO BIG ADVANTAGES

Despite the occasional temptation to put her foot through her dad's computer monitor, Denise appreciates the conveniences of telecom-



Dad does homework. Telecommuting gives Denise LeClair and her dad more time to spend together.

muting. Last spring, for instance, her father helped Denise prepare for her finals in the middle of the afternoon. Denise also likes the fact that, if the TV tape machine goes on the blink, her dad is around to get it going again. Telecommuting has helped Denise's mom, Carol, too. Until recently, Carol worked in town as a keypunch operator. Since Dave was home, she didn't have to take the day off if Denise's younger sister or brother got sick.

The flexibility of Dave's schedule is the biggest benefit the family has received from the computer hookup. Except for occasional emergencies, Denise's dad is not a timeslave to the computer or Aetna. When the roof needed fixing last summer, he worked on it in the early mornings when it was cool. Later in the day, he got on the computer and worked into the evening. Her father also schedules his work around the family when school is out. "He'll get on the computer at 10:30 in the morning, work until noon and then spend all afternoon with us," Denise says.

While Denise hasn't used the LeClairs' computer that much yet, she *is* learning a lot about computers by watching her dad. "It's really fascinating to me. The games are fun, but it's also neat to watch different languages at work, the way they understand all those little numbers," she says.

Denise thinks she might become a telecommuter herself, especially if she has her own family. "It gives the parent more time with her children and spouse. I'm not sure telecommuting would be any fun for single people, though, unless they were really shy. People meet a lot of their close friends at work. If I didn't go to school, I wouldn't meet anybody. I would feel all alone. So, I'd like to go to an office. But telecommuting has more advantages than disadvantages. You just have to get used to it."

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'By 1993, five million Americans will 'go to work' by sitting down at a home computer."

KAREN SCHWARZ is a freelance writer in New York City.

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FOR KEEPS

Should you choose a game system or a computer?

BY PHIL WISWELL AND BERNIE DE KOVEN

Once upon a time, the world of video games was simple. Game systems were inexpensive, easy-to-use machines that did only one thing—played plug-in games.

But those days are gone. Now, video gaming has gotten complicated. Games come on cassettes, disks and even something called a wafer. Some games play on game systems, others on computers. A few play on both. And the machines themselves are changing. Many game systems are offering—or promising—new add-ons to make them into small computers. At the same time, nearly all computers are providing slots for game cartridges.

It's all so confusing! Picking the right game-playing system has become a major decision, with lots of options. Which is best, a cartridge player or a computer? Disks or cassettes? Let's see if we can cut through all this activity and get a clearer picture of which machine plays what software best.

The most confusing fact in this situation is that the video game industry is slowly, but surely, being swallowed whole by the home computer industry. Computers can do everything games systems can—plus a lot more. And computers keep getting cheaper and easier to use.

Game systems companies have responded to this challenge by struggling to make their machines more computer-like. That's not as strange as it might seem. Remember: game systems and home computers are based on similar electronic components—microprocessor chips. A game system is really just a small computer dedicated to playing games. Add a keyboard and some memory—and presto, you have a computer.

At last summer's Consumer Electronics Show, there were no new game systems shown for the first time in six years. Instead, the manufacturers focused attention on expanding their existing machines. Atari's VCS (also known as the 2600), Intellivision, ColecoVision and Vectrex all showed keyboard add-ons and promised disk drives soon. This would make their game players into basic home computers.

Game software companies are thinking in computer terms, too. Bill Grubb, president of Imagic, which has made cartridge games for VCS and Intellivision, has stated that "Imagic will continue to produce software for video games systems. However, the company is dramatically stepping up development of entertainment software for quality home computers."

If game companies are making their machines into computers, and game software companies are pushing computer-style game software, is there any reason to buy a game system today? Shouldn't you buy a computer, instead?

Not necessarily. There are still convincing reasons to buy game machines:

- *More games available.* Game machines can still play many more games than computers can. The VCS offers 250 games that, with

ILLUSTRATION © SUSAN FAIOLA

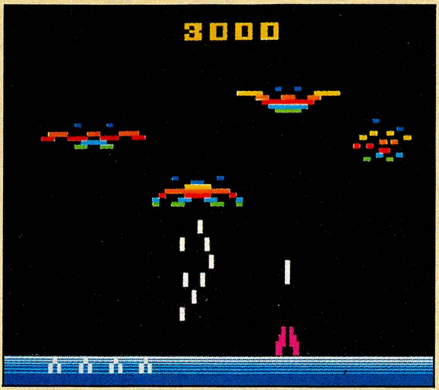
adapters, can be played on other game machines, too. No computer comes anywhere close.

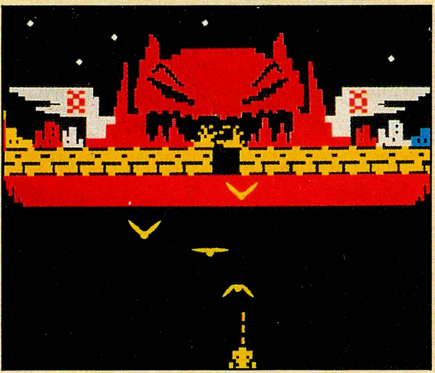
- *Ease of use.* Game systems are still very easy to use. If playing games is your one and only goal, and if you don't really want to learn anything about using a computer, the game machine makes most sense for you. Even the simplest home computer requires more knowledge and practice to use than a game machine.

WHEN A COMPUTER IS BEST

There are situations, though, where a computer is the best kind of game machine to get. "It depends on the kinds of games you want," explains Jon Freeman, a veteran game player, author and computer game designer. "If you are strictly into fast action, arcade-style games, a computer's disk drive is not that big a deal. But if you're interested in certain kinds of games, there are times when a computer—*with* a disk drive, even a low-cost one—makes more sense for you as a game player."

- *If your gaming interests include adventure, fantasy role playing, or strategy games.* "In this case, the disk drive is a *very* big deal," notes Freeman. "What you get with one of those games is breadth: a multitude of treasures and monsters and huge caves to explore, plus a number of different commands you can enter. All of that is heavily dependent on the disk data-storage medium."
- *If you want to play other disk games.* Computer games like Electronic Arts' *Pinball Construction Set* (PCS) give you all the programming tools you need to create your own games. PCS could *not* be done as a ROM Cartridge, or even as a cassette. What's more, the disk lets you save games for future play.





Demon Attack ***on two systems.***
TOP: ***Atari's VCS version.*** *BOTTOM:* ***A different scene on Intellivision.***

The big difference between computers and game machines for game playing, as these examples show, is the disk drive. That means that, by and large, a computer with a tape cassette or some new-fangled low-cost storage device like a stringy floppy or wafer drive (a tiny, ultra-fast cassette) probably won't offer much advantage over a top-flight game system.

To sum up: Right now, game machines are turning into computers, but aren't quite there yet. And computers are getting better as game players, but they aren't there yet, either.

This makes a lot of people wonder if it would make sense to wait until the perfect combination system emerges. While there is an advantage in waiting, because computer products keep on getting better and cheaper, you could end up waiting forever. If you want to play games, you should choose among the best systems that are available right now.

CHOOSING AMONG THE GAME MACHINES

A game machine is a friendly introduction to the world of computers. If you decide you *aren't* interested in owning a computer, here are some of the top game machines that you should be considering.

ATARI'S VCS: The VCS is the least expensive way to go on game systems. It has the biggest library of game software, though its graphics are definitely not the best available.

Game designer Ron Dubren says that "one advantage of a system like the VCS is the availability of new services like Gameline, whereby you now have access to an enormous amount of software through

(Continued on page 43)

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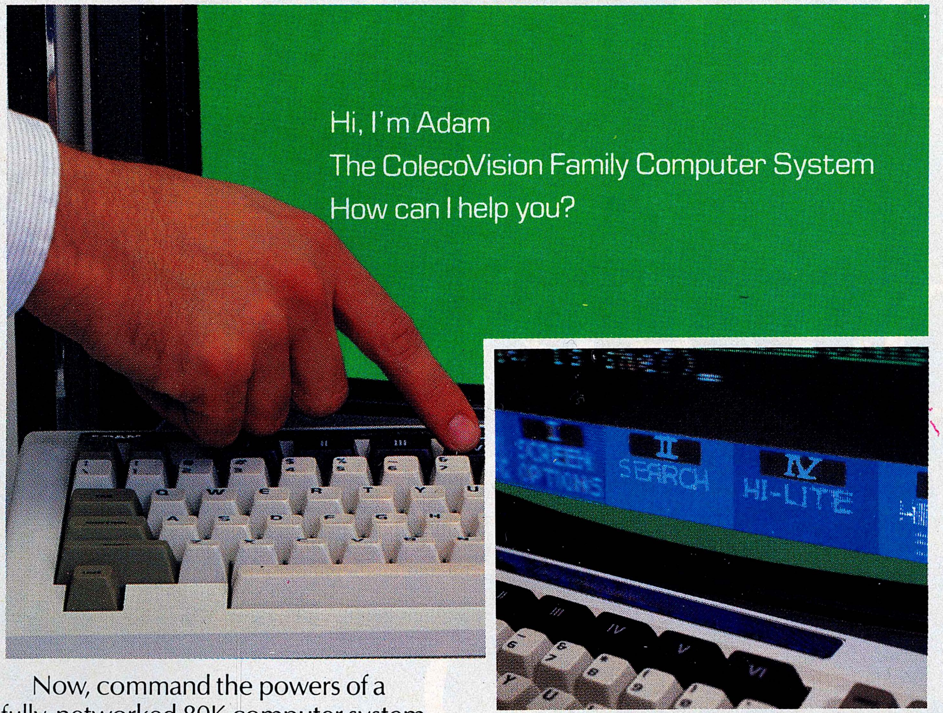

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Adam components are actually six separate computers, all working in harmony with each other as a *network* called Adam Net.™

So, while one component is working on one task, other Adam components are automatically taking care of others.

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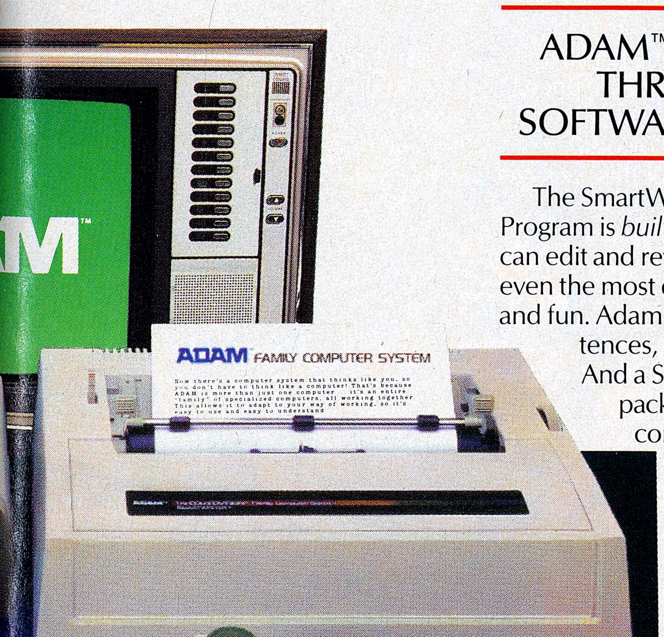
The Adam keys are stepped and sculptured for maximum efficiency. There are 75 full travel keys, plus numeric keypad with joystick cursor control. And the keyboard attaches to the memory console with a coiled cable for comfortable and convenient use. So you can even type on your lap!

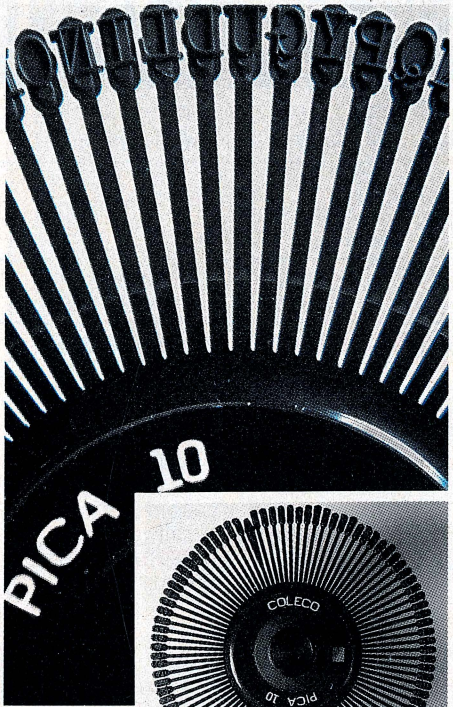
THE ADAM™ PRINTER GIVES YOU A HIGH QUALITY ELECTRONIC TYPEWRITER AT HOME.

Adam comes with a letter-quality, daisy wheel printer (a peripheral that would cost you as much as the entire Adam system in many other home computers).

It's an 80 column printer that uses standard ribbon cartridges and interchangeable daisy wheels for different type styles. There's a 9½" wide carriage for either single sheets or fanfold paper. And the Adam printer types in both directions at a rate of 120 words per minute.



Now there's a computer system that thinks like you, so you don't have to think like a computer! That's because ADAM is more than just one computer ... it's an entire "family" of specialized computers, all working together. This allows it to adapt to your way of working, so it's easy to use and easy to understand



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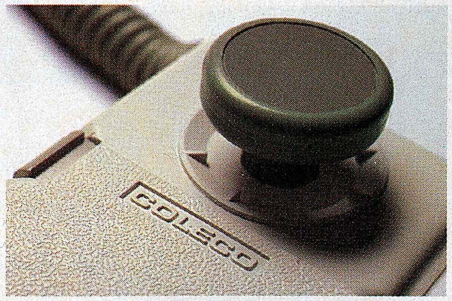
Adam includes the Buck Rogers™ Planet of Zoom™ Super Game pack, two joystick controllers, and plays all ColecoVision cartridges and accepts all ColecoVision expansion modules.



ADAM™ COMES IN TWO MODELS. BOTH DO EXACTLY THE SAME THING.

Adam is also available as an expansion module for your ColecoVision® Video Game System. If you already own ColecoVision all you have to do is plug in the Adam computer module, and begin working with the most sophisticated family computer system you can buy.

WHEN YOU COMPARE FEATURES AND PRICE THERE'S NO COMPARISON.

COMPARE*	The retail price for ADAM™ the COLECOVISION™ Family Computer System is the **total price** for the whole system.			With all other computer companies the base price is just the beginning.	
ADAM COLECOVISION FAMILY COMPUTER SYSTEM	TEXAS INSTRUMENTS 99/4A	COMMODORE 64	ATARI® 800	APPLE® IIe	IBM® PERSONAL COMPUTER
Console with 80K RAM	Console with 16K RAM	Console with 64K RAM	Console with 48K RAM	Console with 64K RAM	Console with 64K RAM
INCLUDED: Mass memory storage drive with FASTRANSFER™ circuitry **INCLUDED:** SMARTWRITER™ word processing built in **INCLUDED:** "Letter-quality" daisy-wheel printer **INCLUDED:** 2 joystick game cursor controllers with built-in numeric keypads **INCLUDED:** Coleco's SMARTBASIC™ program **INCLUDED:** The Official BUCK ROGERS™ PLANET OF ZOOM™ arcade-quality video game	**EXTRA:** Expansion/interface box **EXTRA:** Extra Ram **EXTRA:** Printer interface **EXTRA:** Printer cable **EXTRA:** Daisy-wheel printer **EXTRA:** Mass memory drive **EXTRA:** Joysticks (pair) **EXTRA:** Mfg's. word processing software **EXTRA:** Hit arcade game	**EXTRA:** Printer interface **EXTRA:** Printer cable **EXTRA:** Daisy-wheel printer **EXTRA:** Mass memory drive **EXTRA:** Joysticks (pair) **EXTRA:** Mfg's. word processing software **EXTRA:** Hit arcade game	**EXTRA:** Letter quality printer **EXTRA:** Mass memory drive **EXTRA:** Joysticks (pair) **EXTRA:** Mfg's. word processing software **EXTRA:** Hit arcade game	**EXTRA:** Printer interface **EXTRA:** Printer cable **EXTRA:** Daisy-wheel printer **EXTRA:** Mass memory drive **EXTRA:** Joysticks (pair) **EXTRA:** Mfg's. word processing software **EXTRA:** Hit arcade game	**EXTRA:** Printer interface **EXTRA:** Printer cable **EXTRA:** Daisy-wheel printer **EXTRA:** Mass memory drive **EXTRA:** Joysticks (pair) **EXTRA:** Mfg's. word processing software **EXTRA:** Hit arcade game **EXTRA:** BASIC programming language

*Comparison information obtained by survey taken August 29, 1983.

For what most companies charge for a daisy wheel printer alone, Adam gives you an 80K computer, a word processor, a printer, a memory drive, a detachable professional quality keyboard, and a super game system. All in one package. Ready to use. The most incredible price/value package ever. Use the chart above when you go to buy Adam to compare what you'd have to spend for this package with any ordinary home computer.

And discover that now you can afford to command the powers of a *complete computer system* for the whole family: Adam.

ADAM
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Everything You Need in One Package!
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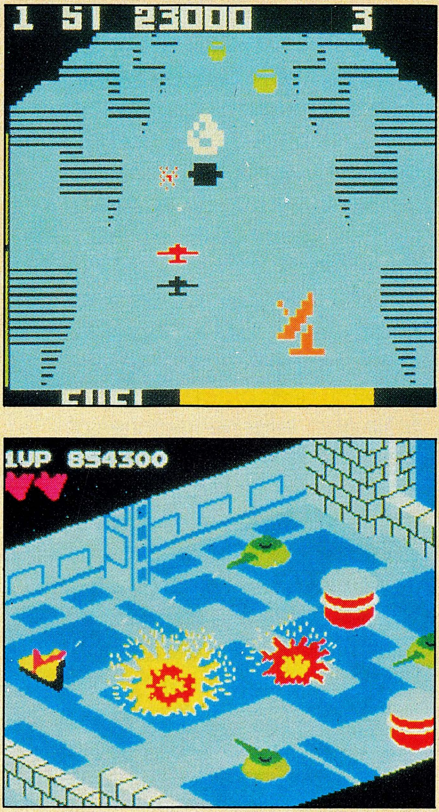
(Continued from page 38)

your telephone." Gameline is a subscription service. You buy a $60 device that connects your VCS to their terminal via telephone. Games can be downloaded to your machine any time of day or night for about $1 per hour. So far, Gameline has 35 games on line and will add about six a month.

VECTREX: The Vectrex is not a system we would buy to expand, even if the promised peripherals arrive. But this is the only home system to use top-quality vector graphics and come with its own special monitor. This means that the machine is designed to display beautiful three-dimensional line drawing graphics, and is perfect for *Asteroid* and *Battlezone*-type games. It also means you don't have to borrow the family TV set every time you play. But there is not much software written for the system, and all of it comes from GCE, makers of Vectrex. This limits the system's growth potential as either a game player or computer.

COLECOVISION: This is the only system we would consider buying with the possible aim of upgrading it to a home computer. Coleco has come up with two package deals, a trend known in the industry as "bundling." The first package is called Adam. Coleco describes it as a home computer with 80K RAM, 500K of high speed mass storage, a daisy wheel printer, one ColecoVision game cartridge, and a word processing program built in. This all-in-one system will cost around $700. The second package is for people who already own the ColecoVision game system. The package will convert the game system into an Adam computer. It will cost about $550.



Computer and game system.
TOP: ***The VIC-20's Zaxxon.***
BOTTOM: ***Same scene, ColecoVision.***

Adam is untested, and may not be able to deliver on all the promises Coleco has made for it as a home computer. But, however Adam fares, "bundled" systems are something to know about.

Something else to consider about the Adam is its "digital data drive" machine. This form of storing information is not a disk drive, and not a "stringy floppy" drive. Coleco claims it's something like a wafer drive. It sounds impressive: high speed random access of programs and 500K of storage capacity. But is anyone other than Coleco writing software for this new medium? No. Will they? It's up to Coleco. In brief: there is no proof that an Adam owner will not be dependent on Coleco for future peripherals and software.

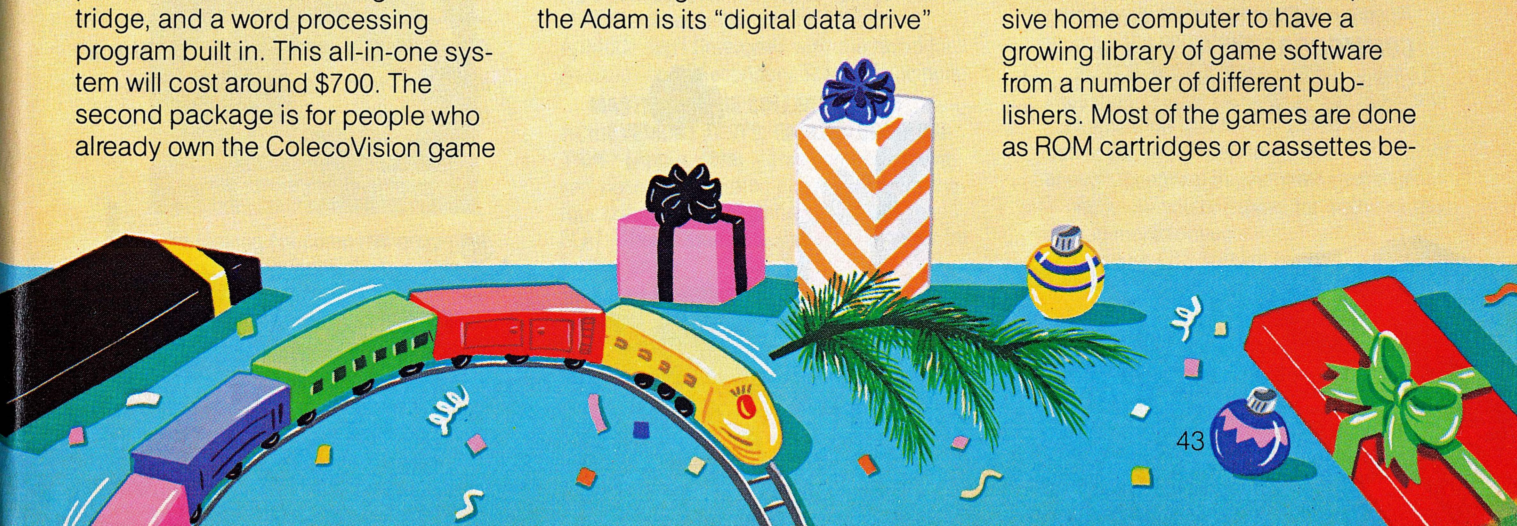
And while the Adam will allow you to do word processing and other computer functions with ease, it is still basically the ColecoVision system for games. You, as a game player, won't get any more from Adam than from ColecoVision.

COMPUTERS AS GAME MACHINES

Because most home computers accept ROM game cartridges, you can look at computers as high-priced game machines. Even if you can't afford a disk drive with your initial computer purchase, you can have plenty of cartridge games to play in the meantime.

If you don't have much to spend, you aren't stuck with buying a game machine and then expanding it later. A few small computers have gotten just about as cheap as game players, particularly the VIC 20 or TI-99/4A computers.

THE VIC 20: This is the least expensive home computer to have a growing library of game software from a number of different publishers. Most of the games are done as ROM cartridges or cassettes be-



cause most VIC owners have 5K memory or 8K with an expansion module. That's about as much memory as a ROM cartridge uses. So, although the VIC does work with a disk drive, it won't do the gamer much good. An 8K game on disk is not radically different from one on ROM cartridge.

THE TI-99/4A: This machine, unlike the VIC, comes with 16K and is expandable to 72K. Interesting games have been created for disks, cartridges and cassettes on this machine. With its low price (about $100) the TI makes an excellent starter system for the computer game player. It has very nice graphics and sounds, and game makers Milton Bradley and Imagic are creating software for the TI, which will certainly enhance its appeal.

If you have a little more money, you can get a much more powerful home computer that plays all types of games. When we talked with game players, game designers, and other industry people about the best "gaming" computers on the market, two names kept coming up: Atari 800 and Commodore 64. We agree, but only after seeing the rush of software companies to support both systems. "A few years ago, video gaming used to be an afterthought with a lot of computer manufacturers," says Tom Lopez of Activision. "Now, it's a primary focus for them. Right now, the best gaming computers out there are the Atari and Commodore lines."

COMMODORE 64: As a game machine, the Commodore 64 is much better than the Commodore VIC 20 because of its 64K memory (actually, there's only 39K free to use, but that's plenty for good video games). With this much memory, you can play disk drive games not possible on the VIC and choose from a lot of different software companies.

The 64 sounds like a great computer, too. It has wonderful graphics and the best built-in music components around. But the manual that comes with it is difficult to use. And we often hear programmers complain about the peculiarities of creating games on the 64. So why are there so many games for this machine? Because enough people own 64's to attract virtually every software company.

THE ATARI 800: The same is true of this machine. Thousands of 800's have been sold, so every company is doing games for this system. The combination of a strong games library with substantial computer power makes the 800 the best game-computer compromise currently available. Jaron Lanier, a freelance computer game designer, says, "If you're interested in music, get a Commodore 64 because of its music chip. If it's game play you're most interested in, get an Atari home computer. There are better computers, but they don't have the software base a game player wants."

The Atari 800 has beautiful graphics and sound effects, expands with cassette and disk drives, and can be interfaced with all standard computer peripherals. It is also much more "user friendly"—easier to work on—than the Commodore 64, and the keyboard is better designed.

THE ATARI 400: Keep in mind that although Atari has dropped the 400 home computer in favor of the snazzier XL models, the 400 is still a very good game machine. It costs under $100 in most stores and features a large library of software. This could still be a good first computer if you like to play games.

Of course, you can look at the more expensive computers—Apples, IBMs, Epsons and the like. They let you handle heavy-duty chores like word processing and high-level math. They have large memories and very powerful components that you can mix and match for many types of work. However, video games should not be the reason for buying one of these expensive machines. You can get all the game power you'd ever want for much less money.

Whatever kind of system you decide to buy—game machine or computer—remember that the goal of game playing is to have fun, and maybe learn a little, too. Look for the system that will give *you* the best time. It's a personal choice. Not everyone likes the same games; not everyone will like the same system best. Don't listen to everybody's advice. Play the systems yourself and choose for yourself. ⊑

PHIL WISWELL and BERNIE DEKOVEN write the "User Views" column. They are contributing editors to ENTER.

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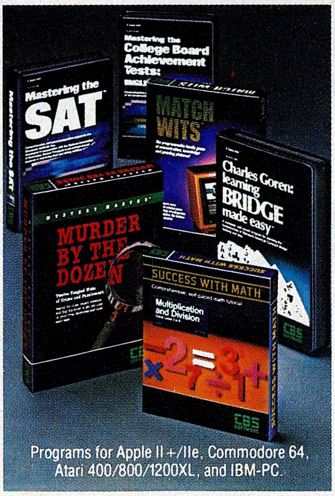
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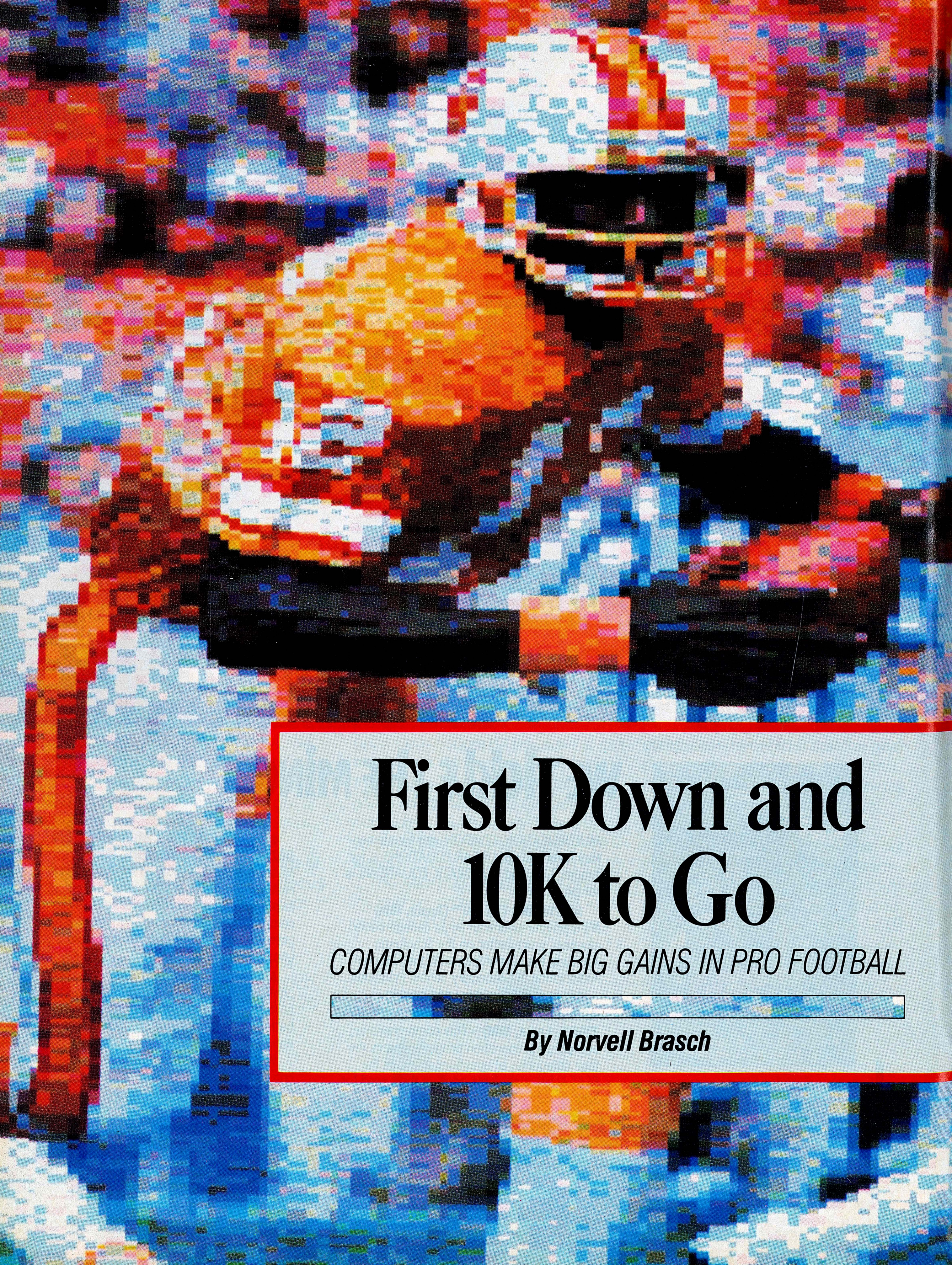


First Down and 10K to Go

COMPUTERS MAKE BIG GAINS IN PRO FOOTBALL

By Norvell Brasch

To many people, football is a game of huge men and bruising physical contact. It seems to require lots of brawn and few brains. But there is a change afield in professional football. A growing number of teams are using a secret electronic weapon.

That "weapon" is the computer. More than 15 National Football League (NFL) teams—including the Denver Broncos, New England Patriots, Philadelphia Eagles, St. Louis Cardinals and Kansas City Chiefs—are using terminals and disk drives to help them trounce the opposition. "Computers in professional sports are lagging well behind other industries," admits Jim Clark, director of data processing for the Broncos. "But they're coming on strong."

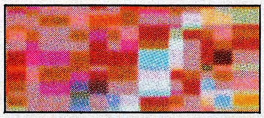
The Broncos were among the first NFL clubs to take the leap into computer technology. One of the major ways in which computers have helped the Broncos is in

scouting for new talent. The Broncos keep their own computerized files on more than 1,000 promising college players. Denver, like more than half of the NFL's teams, is also a member of the United Scouting Combine. This group sends scouts around the country and records critical statistics on college players. The information is distributed to the subscribing teams on computer memory diskettes.

At the Broncos, computer director Clark loads this information into an IBM 34 business computer, then prints out reports for the team's scouting staff of 11. The computer information helps them plan their visits to over 800 colleges each year, saving the Broncos a tremendous amount of time and travel. Using the computer's information, says Clark, "We can concentrate on the five guys at a school who have some potential."

The Broncos use a similar computer system to track more than 6,500 football players who have already graduated from college, both working professionals and free agents. When the team needs experienced talent in a given position, Jim Clark can pull up a complete list of available players, ranked by desirability.

Computers can spot opponent's strategy and help design a winning game plan.



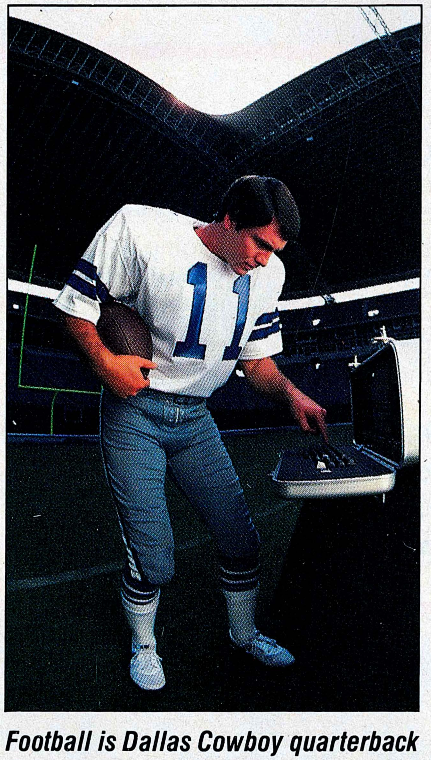
THE STRATEGIC EDGE

For all the computer's help in background areas like ticketing and scouting, its greatest value to a football team lies in planning game strategy. After each game, for instance, Bronco coaches sit down with huge input sheets and watch a film of their most recent game, "coding up" each play. The coaches fill in codes on the sheets for the types of plays, the movement of crucial players, the opponent's reaction, the play's success and dozens of other facts. This information is loaded into the computer. The coaches can then ask the computer to analyze how successful any plays would be in certain situations. The computer also spots the team's tendencies to react in ways that an opponent might predict.

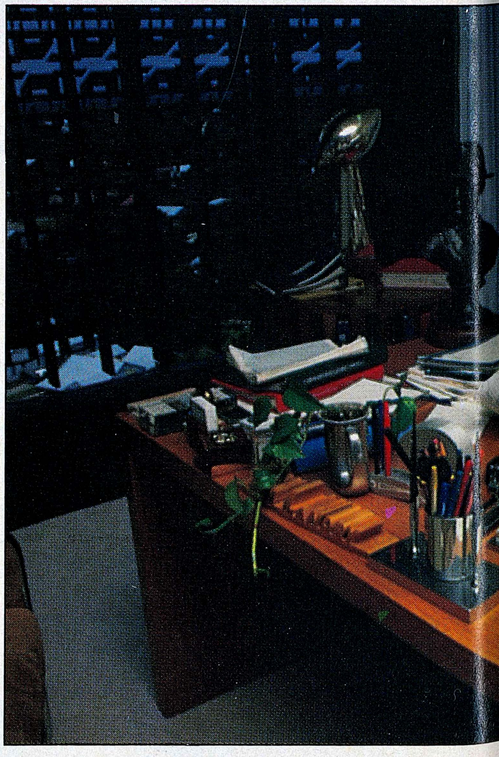
The Broncos also use the computer to analyze their opponent's strategy. By mutual agreement, all NFL teams exchange films of their three most recent games the week before they meet on the field. "On Monday afternoon, we receive the film from our opponent's game the previous day," explains the Broncos' Jim Clark. By Monday evening, all three games are coded, and the reports are delivered to the coaches by Tuesday morning. By Wednesday, the coaches have devised the game plan based on the computer reports. "The plan is only altered if the opposition varies from its prior tendencies at the actual game," says Clark.

A GIANT CHESS MATCH

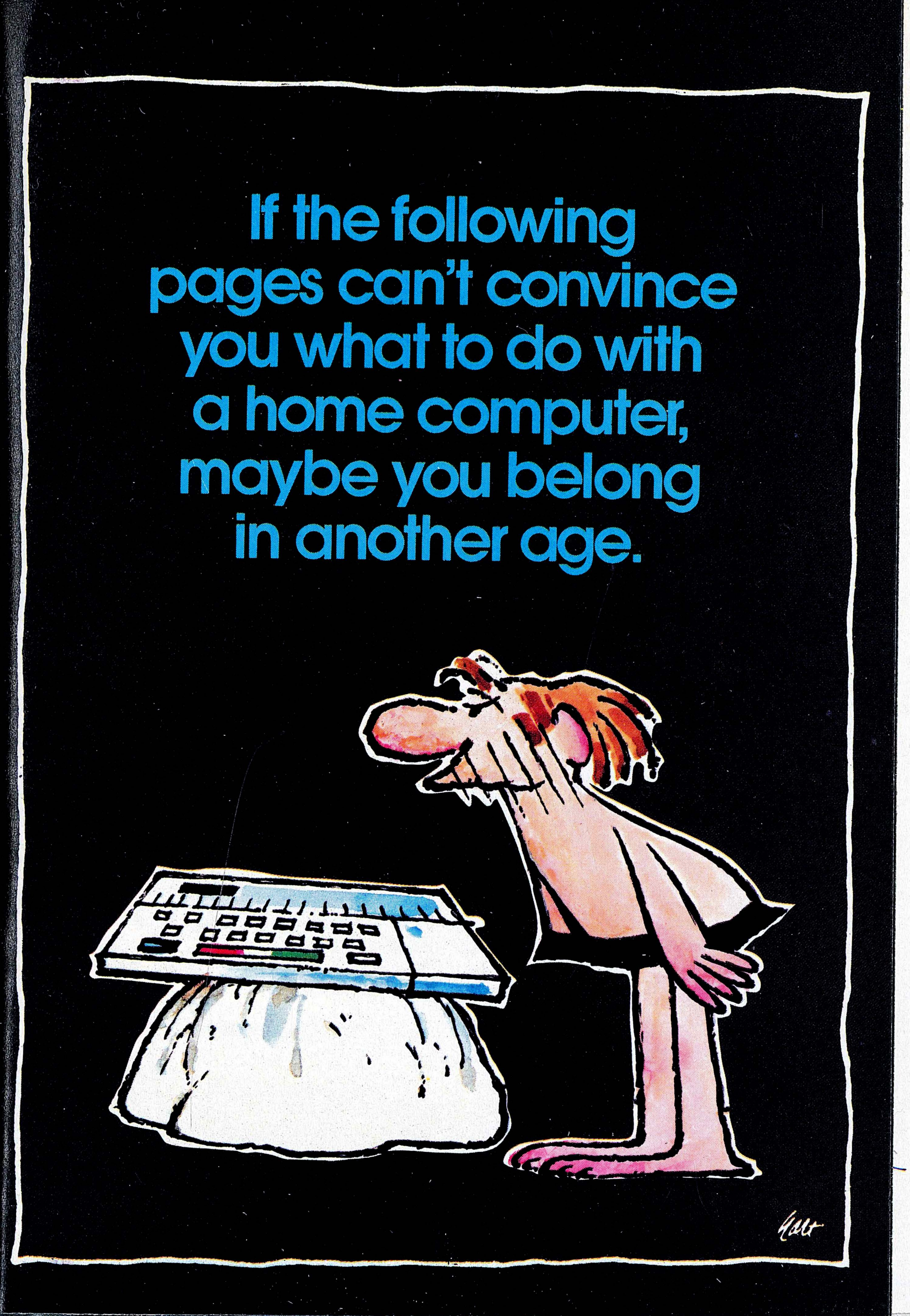
The process of trying to outguess opponents is like a giant chess match. Since every team gets to see films of its opponents, there is no secret in how a football team plays the game. The difference is in the coaching staff's



Football is Dallas Cowboy quarterback Danny White's favorite computer game.



Yard by yard, Cowboy coach Tom Landry


If the following pages can't convince you what to do with a home computer, maybe you belong in another age.

To retain this booklet, tear out from publication.

owboys' first use of *Sports-Pac,* complete software package lready used by 11 other NFL eams and two teams in the new nited States Football League. urt Gilner, president of MTD roject Services and the originator f *Sports-Pac,* originally wrote e program for the Tampa Bay uccaneers, Gilner is particularly roud of the program's flexibility. It an provide coaches with more an 400 different kinds of reports, overing everything from types of lay formations to pass patterns in ifferent parts of the field. The rogram also allows the coach to se his own terms when speaking the computer. "*Sports-Pac* peaks his language," says Gilner.

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The future of the computer in football is wide open. The Broncos' Jim Clark suggests that someday an entire game plan will be computerized by the middle of a game week. Then, each player will get a chance to learn his part directly from the computer. "The quarterback will type in 'It's third down with two yards to go and I'm planning on running,' and the computer will respond, 'You're up against a tough defense and the odds are 25 to 1 this play won't work!" Clark predicts.

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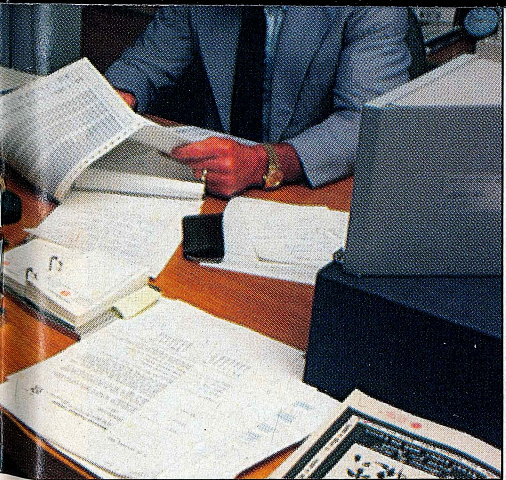

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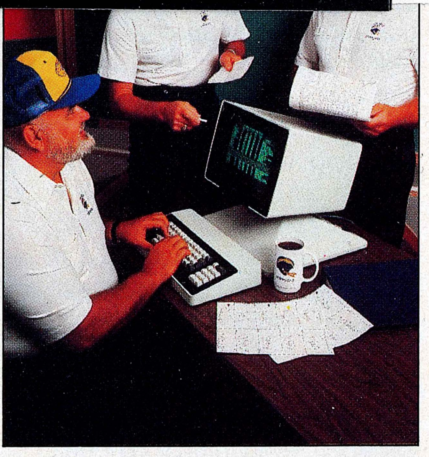

San Diego Charger coaches huddle with computer's to plan game strategy.

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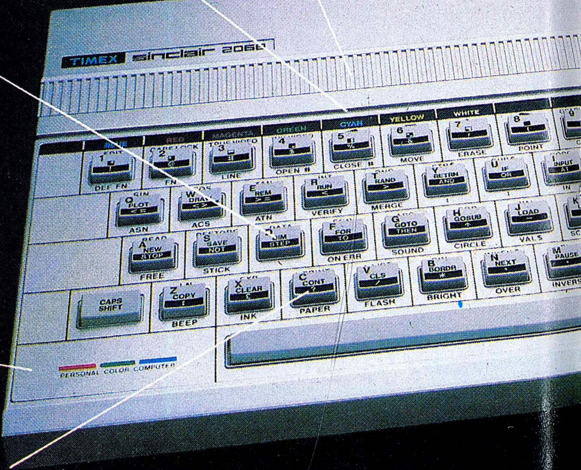

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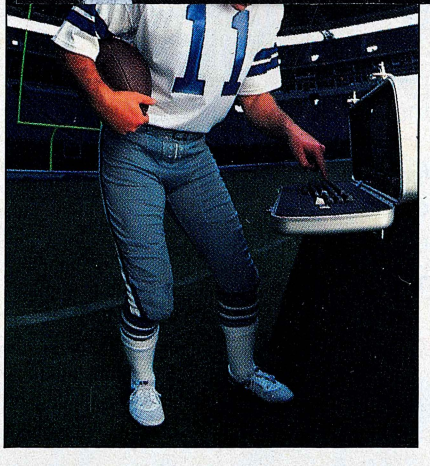

Football is Dallas Cowboy quarterback Danny White's favorite computer game.

Yard by yard, Cowboy coach Tom Landry

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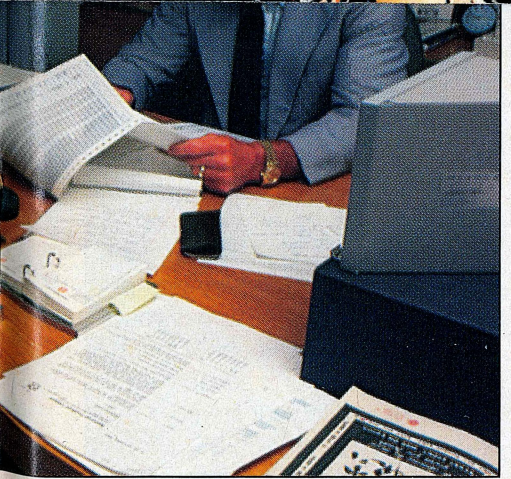

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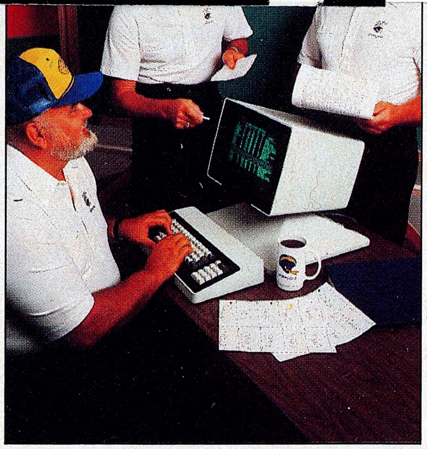

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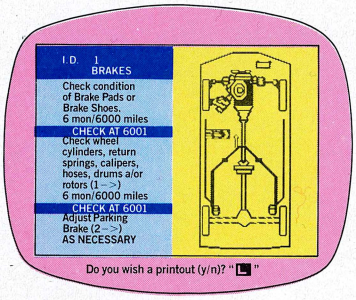

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   BRAKES
Check condition
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6 mon/6000 miles
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springs, calipers,
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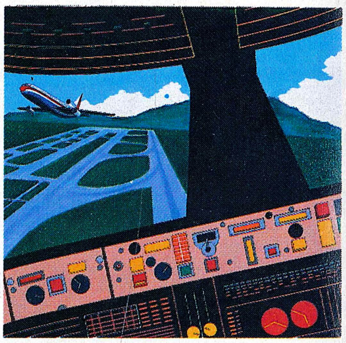

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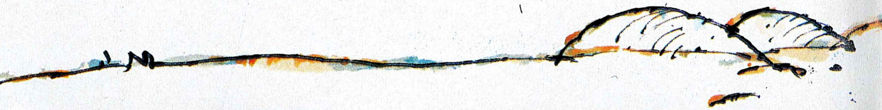

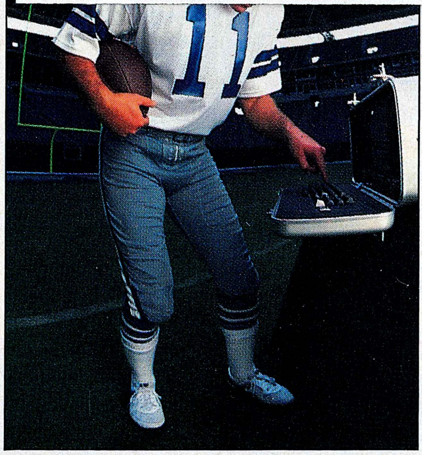

Football is Dallas Cowboy quarterback Danny White's favorite computer game.

Yard by yard, Cowboy coach Tom Landry

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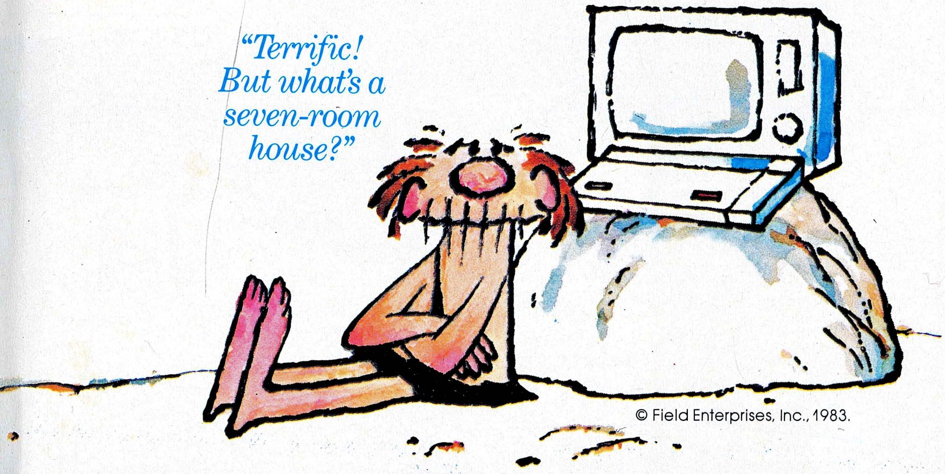
"Terrific! But what's a seven-room house?"

© Field Enterprises, Inc., 1983.

To retain this booklet, tear out from publication.

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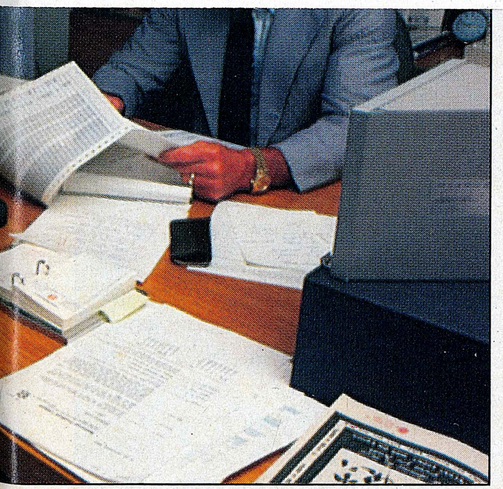

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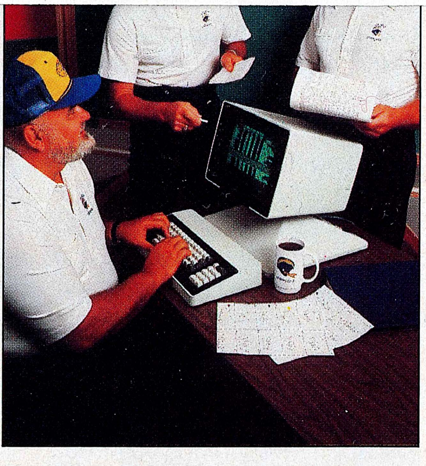

San Diego Charger coaches huddle with computer's to plan game strategy.

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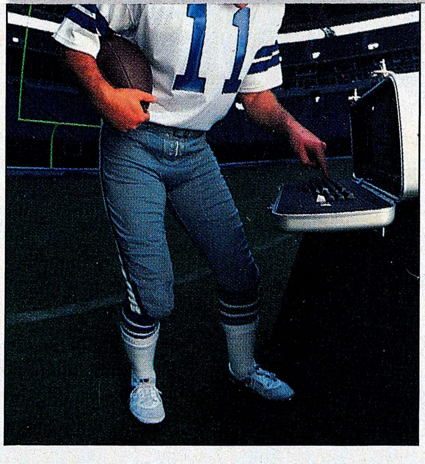

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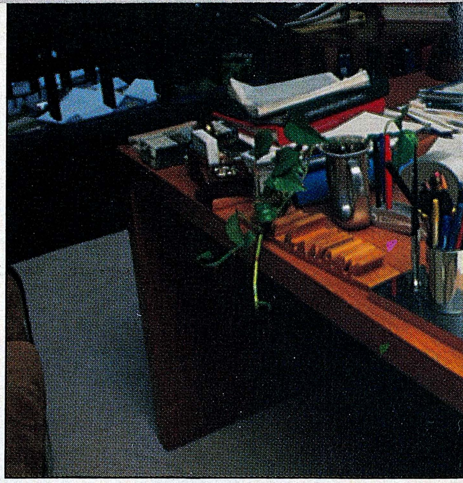

Yard by yard, Cowboy coach Tom Landry

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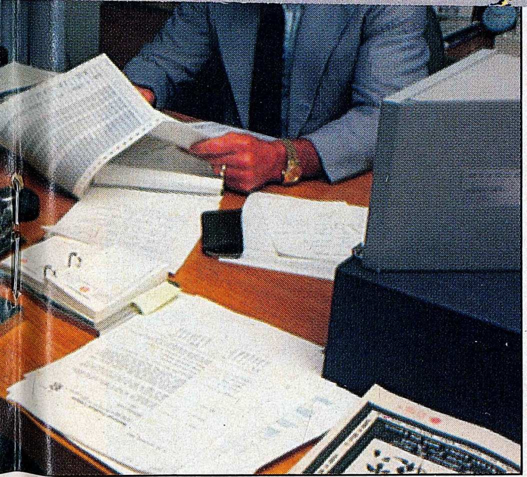

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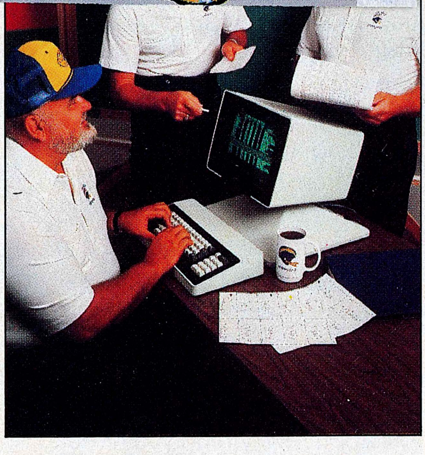

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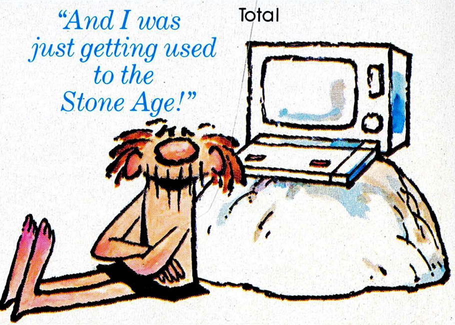
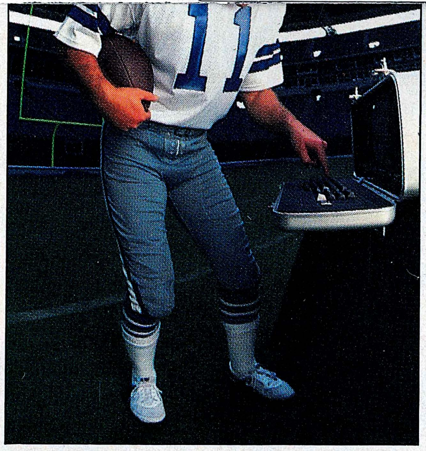

"And I was just getting used to the Stone Age!"

TIMEX sinclair 2068



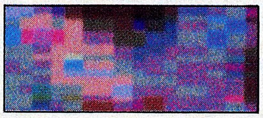
Football is Dallas Cowboy quarterback Danny White's favorite computer game.

Yard by yard, Cowboy coach Tom Landry

ability to decipher the game plan, predict the opponent's next move and base a strategy on that prediction. The computer can give a team an advantage in spotting patterns of play the opposition misses. The Bronco coaches say their computer increases their ability to study the game and frees time for active work with the players. So, says Jim Clark, "we've got an edge on most teams."

Other teams might disagree. Though the Broncos got an early start, they are now just one of many teams making wide use of computers. Take the Dallas Cowboys, for example. The Cowboys have long been known for their use of the computer, even though they employed outside service companies to handle their computer applications. "We go more into depth, we get more on the computer [than other teams]," claims Marge Anderson, coach Tom Landry's executive secretary. "We're just a little bit more sophisticated."

Could the Super Bowl become a battle between the teams with the best computers?



This sophistication is particularly apparent in Dallas's training programs. Every Cowboy player's training routine is determined by the computer to provide the perfect body styling for his position. The computer also oversees the operation of machines in the Dallas weight room.

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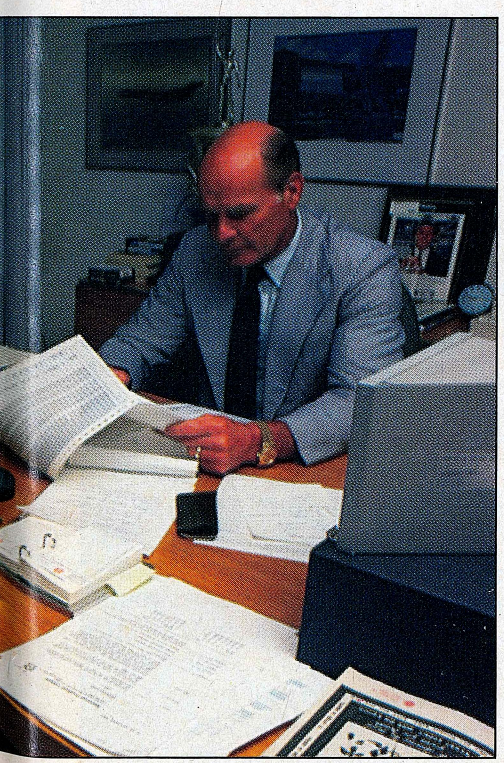

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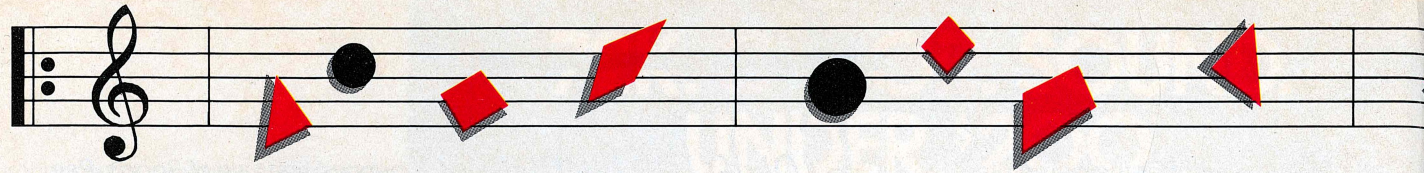
DEPTH CHART
OFFENSE
DEFENSE

San Diego Charger coaches huddle with computer's to plan game strategy.



ROCK AROUND THE BLOCK

BY KAREN SCHWARZ

Rock stars and electronic musicians aren't the only ones who can unlock the secrets of computerized music. With today's low-price home computers, software and synthesizers, you can teach yourself standard music theory or even compose a wild electronic symphony. Here are a few systems that can help you get started as a plugged-in performer.

MATTEL GAME SOUNDS

Mattel's Intellivision or Intellivision II game systems can also be musical instruments. You can now buy a 49-key synthesizer (each key can play varying pitches) that attaches to a game unit through an adapter. The adapter costs $125, and comes with a keyboard as well. The synthesizer costs an additional $80.

Mattel also sells musical software. It takes you from basics to your own composing. *Music Tutor* is basically a do-it-yourself piano teacher. *Melody Blaster* is a musical version of the *Astromash* video game. *Song Writer* teaches you how to compose melodies that you can record onto a cassette for editing and playback. Each of these software packages will cost you $26.

ATARI MUSIC

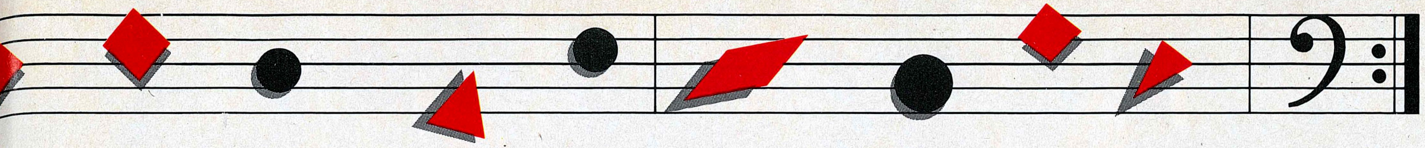
Atari's new line of four computers, the 600XL, 800XL, 1400XL and 1450XL, lend themselves quite easily to music instruction. You don't have to add a musical keyboard, because the musical notes correspond to the computer's own keyboard. If you use an optional monitor jack that comes with the computer, you can hook it up to your stereo and record your computer sound. Otherwise, your TV acts as both monitor and speaker. All four Ataris have a 3½ octave range and four voices. (Voices are like tracks—you can have four different voices sounding at the same time.) The sound from the Atari resembles a piano or organ, but with practice you can turn it into something like a full orchestra. Prices for the Atari computers are expected to range from $200 to $1,000.

Atari offers several music software programs which take you through just about everything you need to know in order to compose. Among the titles are *Terms and Notations*, *Rhythm and Pitch* and *Scales and Chords*. The programs cost $29.95 each. *AtariMusic I* and *II* teach you how to read music through practice drills, games and self-guided instruction ($39.95). *Music Composer* (which also costs $39.95) teaches you how to "score" (write your composition onto the disk). To get the hang of it, you might want to start on Atari's *Magic Melody Box*. This software allows you to use your joystick to draw and play a melody line. It costs $29.95.

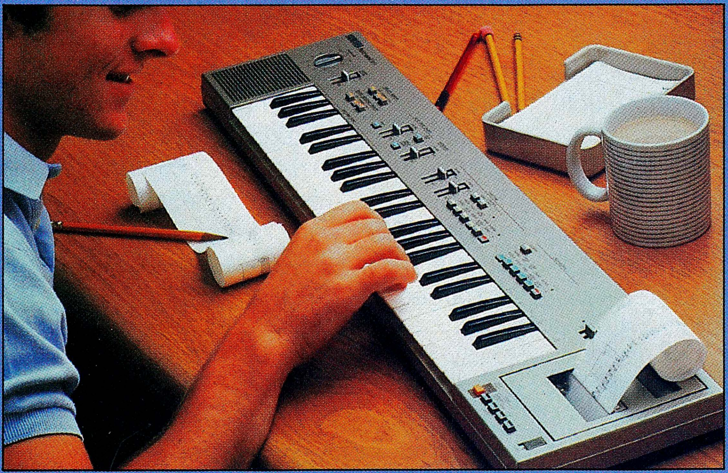
APPLE AND COMMODORE

Kaleid-a-sound software by Passport Designs is made for Apple Systems. It's similar to *Magic Melody Box*, but it will give you an idea of what the pros are doing with their synthesizers and computer composing. You can actually watch the sounds of your favorite recording artists twist and jump across your monitor. This software, hooked up to the Apple II Plus or the Apple IIe, can be jacked to your stereo. *Kaleid-a-sound* costs $39.95.

The Commodore 64 computer

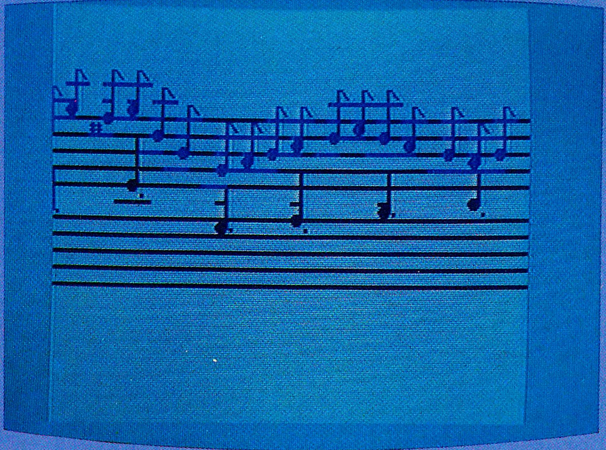


YAMAHA'S MP-1:



While you play away, the MP-1's printer takes notes.

CASIO'S PT-20: **Rhythm, seven voices and 29 keys.**



MUSIC COMPOSER:

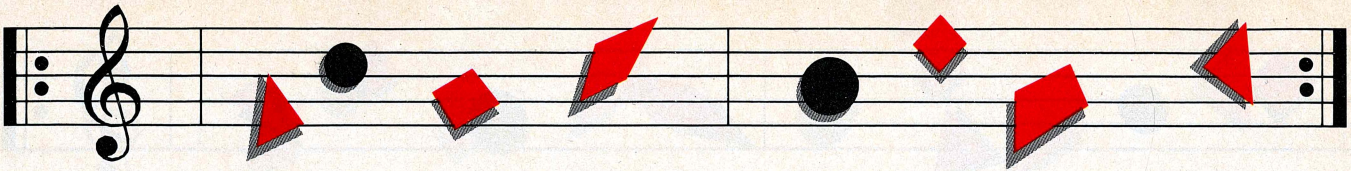
This software "scores" on Commodore 64.

doesn't need an add-on musical keyboard. You just hook it up to your TV. A built-in synthesizer on a chip called SID (Sound Interface Device) gives you three voices and nine octaves. Through four "wave forms," which you control, you can imitate musical instruments and create new sounds or sound effects. Musical software for the Commodore 64 includes *Music Composer*, which transcribes sheet music into notes the computer can store and play ($29.95), and *Music Machine*, which will get you playing and composing even if you've never programmed before ($29.95).

If you're looking for beginner software, try EPYX's *Fun with Music*. This disk allows you to compose a simple tune and then use it in a musical video game. It also plays familiar songs while showing you the melodies in note form on the screen. You can play and enjoy *Fun with Music* even if you know nothing about quarter stops or G clefs. *Fun with Music* ($34.95 to 39.95) can be used with the Commodore VIC 20, Atari and Texas Instrument computers. For more information, you can write to Epyx, 1043 Kiel Court, Sunnyvale, CA 94089.

RADIO SHACK

Orchestra 90, by Software Affair, is compatible with the Radio Shack TRS 80 Models 3 and 4. *Orchestra 90* has almost limitless possibilities, with a six-octave range, five voices and five timbre settings (timbre is the sound quality that distinguishes one sound from others of the same pitch and volume). Because this program is so flexible, learning to use it may take some time. It costs $99.95. You can use your TRS 80 with your stereo by plugging in an add-on interface board that comes with the software. Otherwise, you



can use your television set.

ELECTRONIC MUSIC WITHOUT COMPUTERS

You don't *have* to have a computer or a game system to experiment with electronic music. Casio makes synthesizers that are portable, simple to operate and inexpensive. The MT-11 is a 32-note keyboard that weighs a little over two pounds. It has a 2½ octave range and seven voices (piano, electronic piano, harp, pipe organ, accordion, violin and clarinet). You can add other musical effects, like vibrato, select tone and sustain sound. It costs $99.50. The Casio PT-20 is slightly smaller with 29 keys and a 2½ octave range. It also generates 17 rhythm backgrounds, and can store 508 notes for instant playback. The PT-20 costs $79.95. Both Casio synthesizers have jacks to hook up with your stereo.

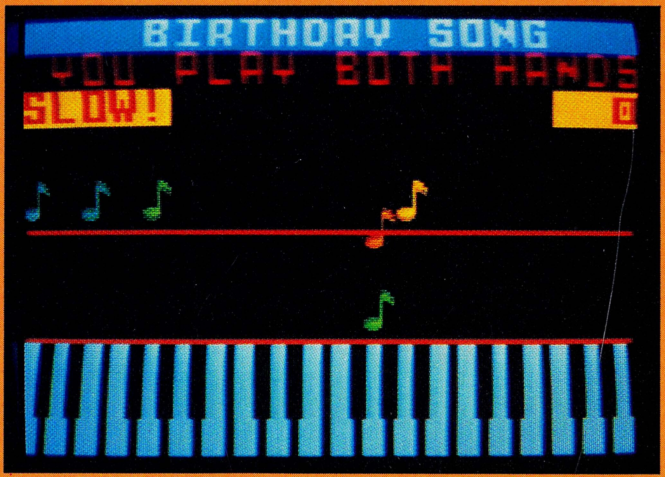
Even more affordable than the PT-20 or the MT-11 is the VL-1 by Casio. Weighing just 15.4 ounces, it's a 29-note keyboard with five voices and a 2½ octave range. It offers a choice of 10 rhythm backgrounds, including march, waltz, swing, rock and samba, and stores 100 notes for instant playback. The VL-1 even has a calculator in it. Retail price is $49.95.

You can play and write music at the same time, even if you know nothing about musical notation, with the MP-1 from Yamaha. This incredibly compact keyboard system lets you play in many voices, with several background beats, while a computer-controlled printer next to the keys writes your playing as notes, clefs and chords. The device is limited in its breadth of musical expression to basic chords and recognized rhythms. But, it offers a beginner a marvelous way to learn about music while enjoying yourself. The MP-1 costs about $800. For information: Yamaha Specialty Products, P.O. Box 6600, Buena Park, CA 90622.

You can teach yourself how to play the drums electronically by accompanying your favorite recording artist on the Synsonics Rhythm Maker Drums by Mattel. These four electronic pads (snare, two tom-toms, cymbal and bass) sit on a black case that is just a little larger than a tape deck. The three programmable memories inside the case can store up to 4,000 drum patterns. Or, you can tap away and make your own real-time beat. The Synsonics Drums cost $50.

The wealth of musical hardware and software available today lets you become a computer musician on as little as $50. All signs point to more software, and cheaper hardware, becoming available soon.

KAREN SCHWARZ is a freelance writer.



MELODY BLASTER: **Setting Mattel's Astromash video game to music.**

SYNSONICS DRUMS: **This machine has a big beat and saves 4,000 drum patterns.**

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For the name of your nearest Chalk Board dealer, call 800-241-3989. In Georgia, 404-496-0101.

PowerPad. A touch of genius.

CHALK BOARD INC.

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state of the art

TOUCHPAD POWER

COMPUTER AT YOUR FINGERTIPS

BY JIM LEWIS

Faster than a trackball! Less confusing than a keyboard! Able to leap from point to point on almost any computer screen!

It's the touch tablet—a mild-mannered, pressure-sensitive control device that makes using a computer easier than ever. Simply plug in this controller (where you'd usually connect a joystick) and put in the software. You can make music, draw pictures, play games, even program—just by pressing on the surface of the tablet.

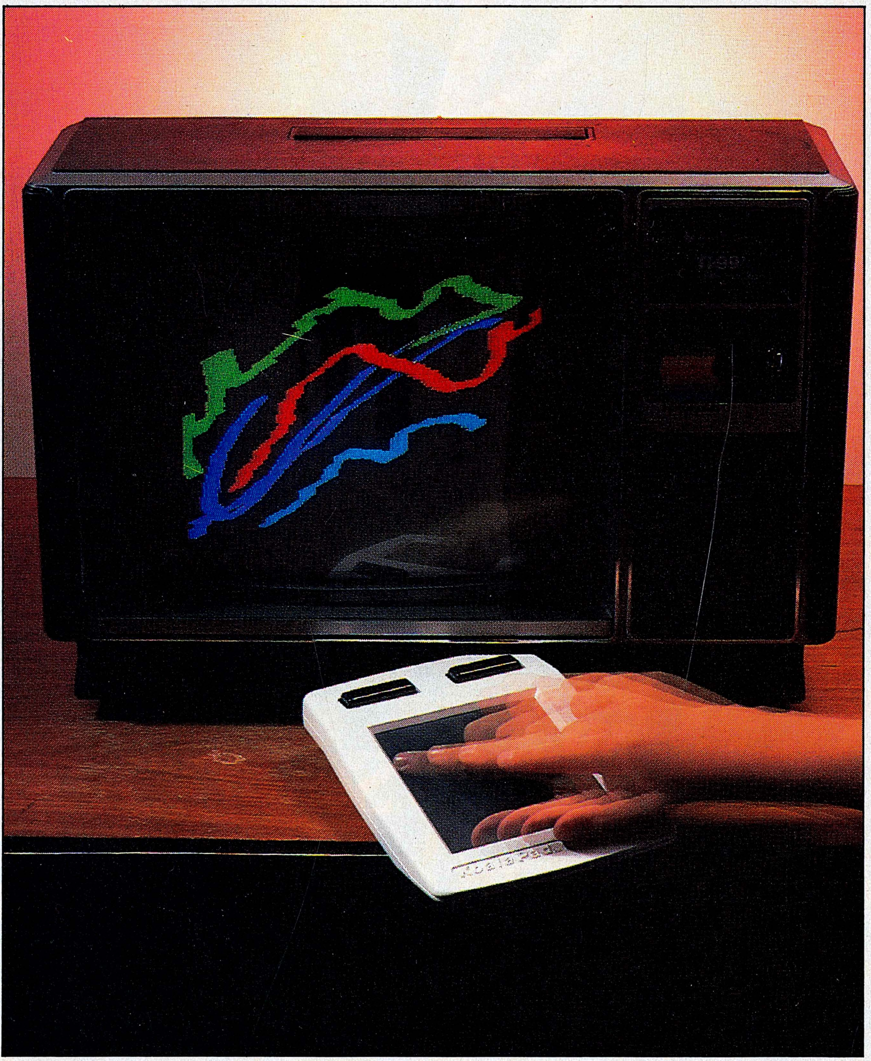

PHOTO © DANIEL QUAT

A finger on the Koalapad paints swirls of color across the computer screen.

Fingertip Control

Touch tablet technology is not new. Devices that let you control the computer by pointing or touching have been around since the mid-1950s. Back then, the military used light pen controllers in its air defense system. By the early 1960s, the first touch-sensitive tablets were being used by professionals in such fields as architecture and engineering. But these devices were expensive and of little use to home computer users.

"I could see that the touch tablet had other potential uses," says Dr. David Thornburg, chief scientist at Koala Technologies. In 1977, Thornburg developed the Koalapad—an easy-to-use, lower cost (under $150) touch tablet controller.

In the past six years, many computer companies, including Tandy and Atari, have developed touch tablets. Most of these tablets are designed solely as

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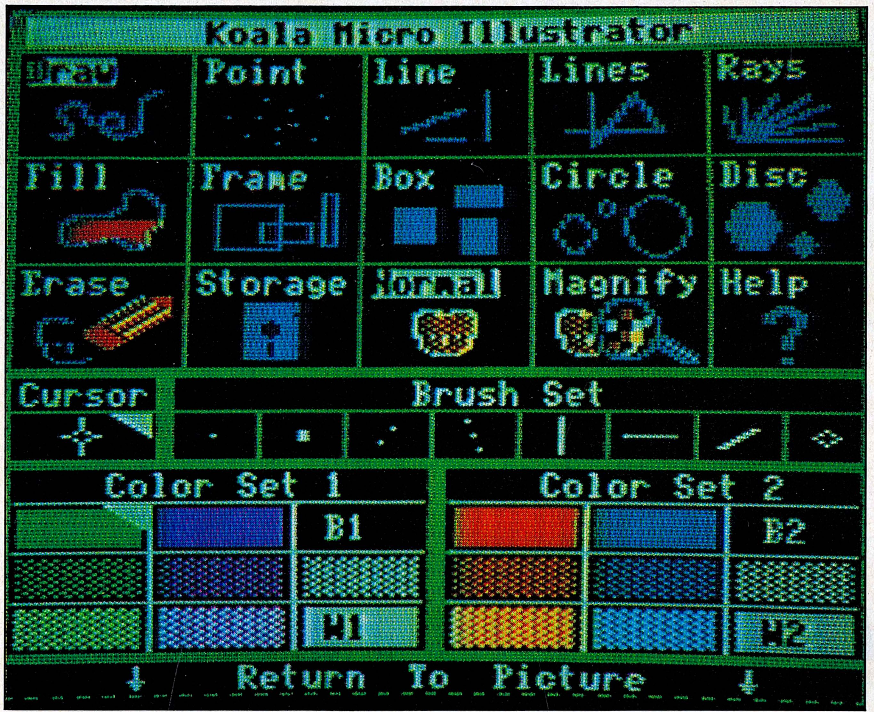


Koalapad's *Micro Illustrator* menu serves up all kinds of shapes and colors.

graphic pads, though. You draw on the pad and get a picture on the screen. Only Koalapad and another tablet called the PowerPad (from Chalk Board, Inc.) seem to have taken full advantage of what the touch tablet can do.

Both Koalapad and PowerPad are much more than drawing devices. "What you have is a very flexible controller," says Bob Ranson, president of Chalk Board, Inc.

How does a touch tablet work as a controller? Each point on the surface of the tablet corresponds to a point on the computer screen. When you press the tablet, an electronic command is sent to the corresponding point on the screen. "The tablet translates [your finger pressure] into signals a computer can understand," explains Dr. Thornburg.

What happens as a result of this electronic signal depends on the software you are using. With a musical software program, for example, pressing the tablet at a certain point can instruct the computer to sound a note or chord. If you are using graphics software, the command may instruct the computer to draw a line or put color in a space. And with game software, moving your finger around the tablet might propel your spaceship around the screen.

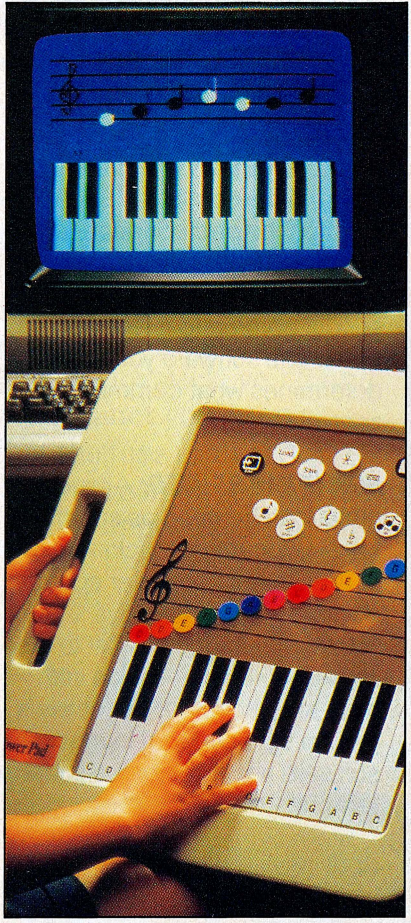
"Each time you change the software, the pad takes on a new role," says Bob Ranson.

From Touch Tablet to Piano Keyboard

To help users remember what role the tablet is playing, Chalk Board includes a plastic overlay with every software package. (Some Koalaware packages also contain overlays.) This clear plastic overlay sits on the surface of the tablet and reminds you what happens when you press each section of the tablet surface. For instance, when you use "Micro-Maestro"—PowerPad's musical software—the plastic overlay makes part of the pad's 12 inch by 12 inch surface look exactly like a piano keyboard. Press down on these "keys" and you'll be making music.

"The pad becomes a custom-tailored control device," says Dr. Thornburg, "and that makes our touch tablet very user-friendly... Drawing is more natural than typing, and that can open up the computer to new users."

This means that you don't have to memorize a typewriter keyboard or learn to jiggle a joystick with precision accuracy in order to control your computer. That's good news for all computer users, but it's especially good for those



Playing piano on PowerPad is as simple as switching software.

people—the old, the very young, the disabled—who may have difficulty using keyboards, joysticks or other traditional computer control devices.

Koala & PowerPad

The Koalapad and the PowerPad are similar, with some differences.

The Koalapad weighs only one pound and measures six inches by eight inches. Its smaller size makes it easier to handle than the PowerPad. The Koalapad also can be used to control your regular game software, according to Dr. Thornburg. PowerPad won't work on game software that is not specifically designed for the pad. But PowerPad *does* accept input from more than one point at a time. Koalapad only accepts the command from the first point you touch.

Both the Koalapad and the PowerPad went on sale this fall. If enough people get their hands on them, users everywhere will want to reach out and touch their computer.

JIM LEWIS is associate editor of ENTER.

PROGRESS REPORT: TOUCH TABLET

WHAT IT IS: A touch tablet is a pressure-sensitive pad that connects with a computer. Each point on the pad corresponds with a point on the screen. Press a point on the tablet and you send a command to the computer. The software you use determines what command is sent.

MicroMaestro
PowerPad
CHALK BOARD
Leo's 'Lectric Paintbrush
CHALK BOARD
Power Pad

HOW IT CAN BE USED: A touch tablet can be used as substitute for a keyboard, joystick, trackball or most other computer control devices. Plastic overlays let you tailor the touch tablet to the software. Put in graphics software and the tablet becomes a painter's palette; put in musical software and it becomes a piano keyboard.

HOW MUCH THEY COST: The PowerPad from Chalk Board, Inc. sells for $99.95. It connects with all home computers, but a special connecting cable is needed to connect with IBM and Apple computers.

The Koalapad from Koala Technologies Corporation varies in price, because each pad is especially designed for the computer being used. Koalapad costs $150 for the IBM home computer, $124.95 for the Apple, and $99.95 for other home computers.

WHERE TO GET THEM: Both the Koalapad and the PowerPad should be available at computer stores, department stores and even some discount toy chains.

WHAT'S NEXT? If the touch tablet becomes a popular computer control device, more software will be designed to make full use of its potential, and more companies will begin making this kind of controller.

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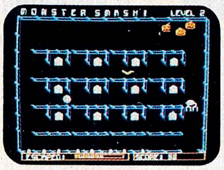

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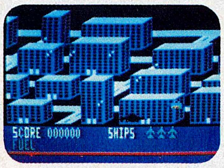

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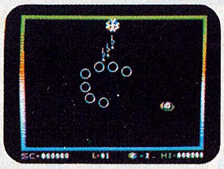

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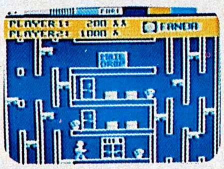

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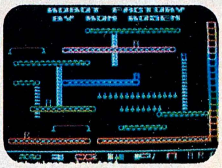

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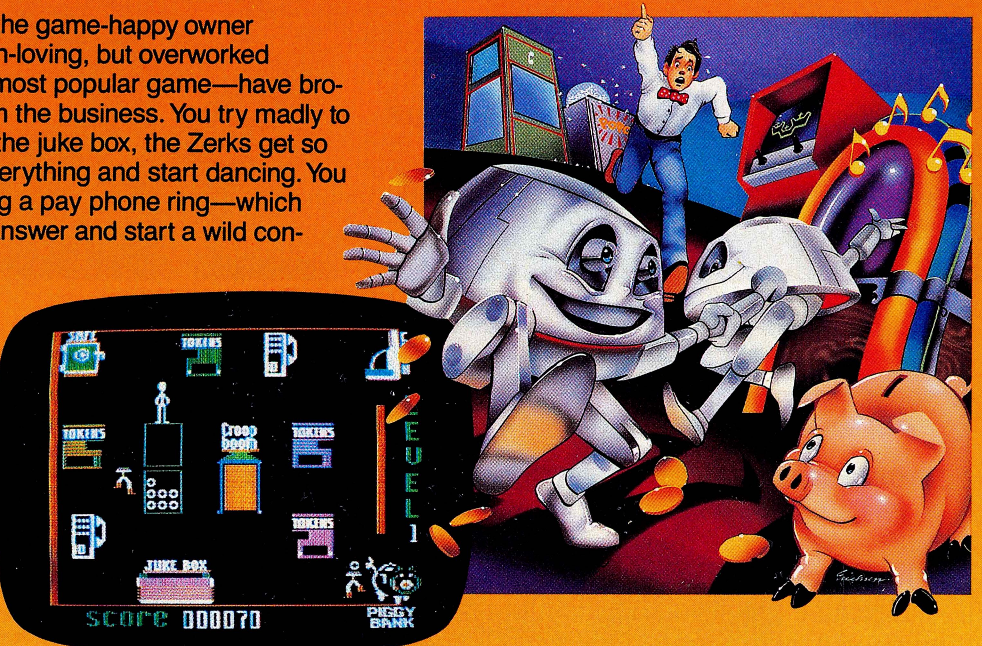
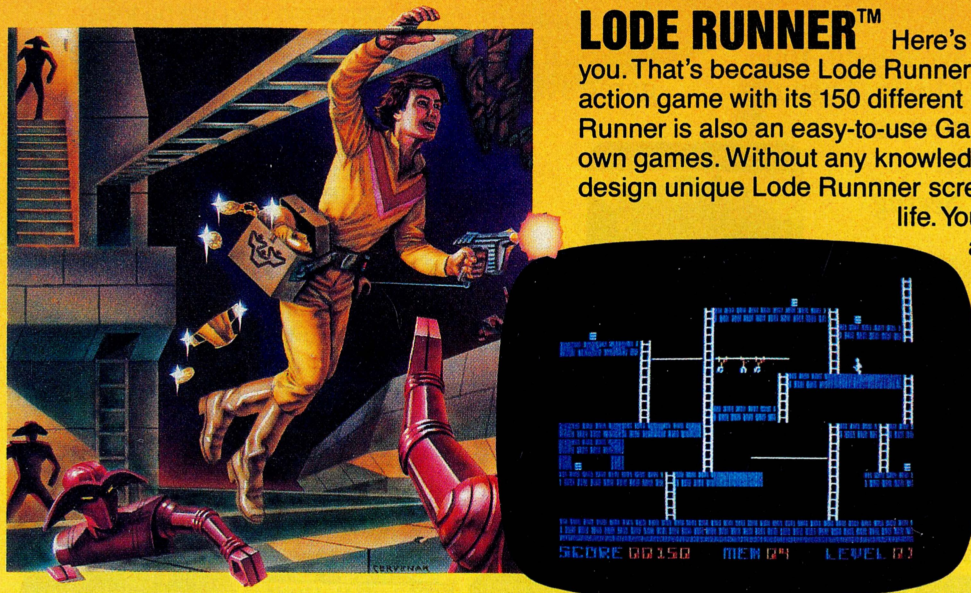


and an endless challenge



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basic training

BOXY IN MOTION

BY JEFF NILSON

This month's "Basic Training" program shows you the first step in computer animation—how to move a boxy human figure around the screen. It is programmed in Applesoft for the Apple II family of computers. If you have an Atari computer, we'll send you an adaptation of this program. See the box at the end of this story for details.

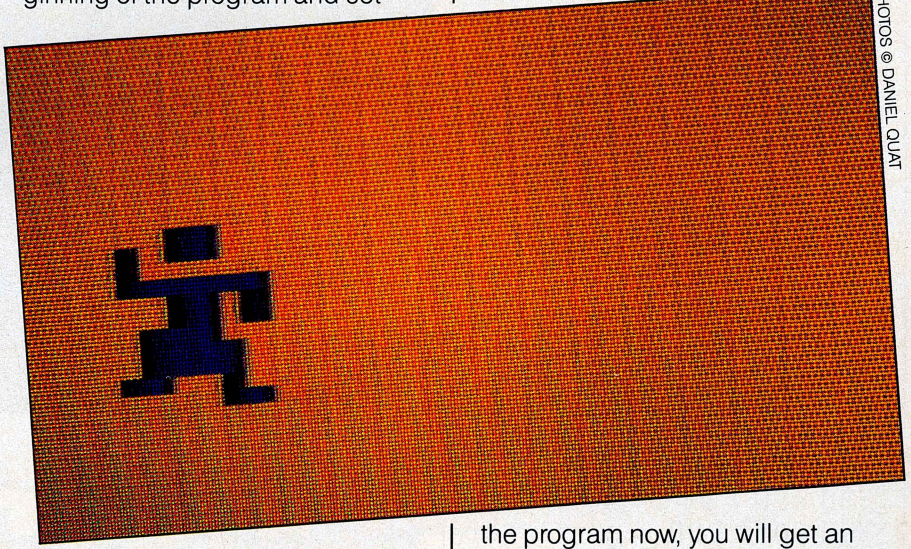
(If you have a Commodore 64 computer, we've provided a short program for you in this issue. See the last page of "Basic Training.")

You can use our boxy figure to start a game. For instance, you might want to create a second figure like the first and have the two dance to a song played through the Apple's speaker. Or try creating an animal and have it chase the boxy figure.

A note on this issue's program: in good computer games it is easy to tell the computer what to do. In adventure games, you type commands like, "Go north five steps." In arcade games, you move objects by pressing certain keys. Moving the figure in this month's program isn't quite as easy. You have to type into the computer the direction and the number of steps you want the figure to move. But this program is just the first step in our homemade animation scheme. In next issue's "Basic Training," we'll show you how to have the figure respond when a player types commands in English.

The Program Starts Here

First, type in lines 1 through 125, which draw the figure at the beginning of the program and set the colors. If you want to change colors, change the numbers that follow FC (figure color) and BC (background color) on line 10. You can also give the figure a new starting position on your computer screen by changing the numbers for X and Y on line 10.



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```
1   HOME
5   GR
10  X = 10:Y = 20:FC
    = 7:BC = 1
12  PT = 1
100 REM **
    INITIALIZE **
105 GOSUB 800
110 GOSUB 1000:
    GOSUB 1050
120 GOSUB 1100:
    GOSUB 2300
125 PT = 1
```

The main loop of the program goes from line 200 to line 499. Enter these lines now, but don't run the program yet. You still have to enter the subroutines called in the main loop. If you run the program now, you will get an error message.

```
200 REM * TAKE INFO
    ON WHERE *
205 REM * TO MOVE
    FIGURE *
207 HOME
210 HTAB 1: VTAB 21:
    PRINT ''ENTER
    DIRECTION:''
215 HTAB 1: VTAB 22:
    PRINT ''U
    {U P} D {DOWN}
    R {RIGHT}
    L {LEFT}''
220 HTAB 1: VTAB 23:
    INPUT ''ENTER 'E'
    TO END.'';DI$
225 IF DI$ = ''U'' THEN
```

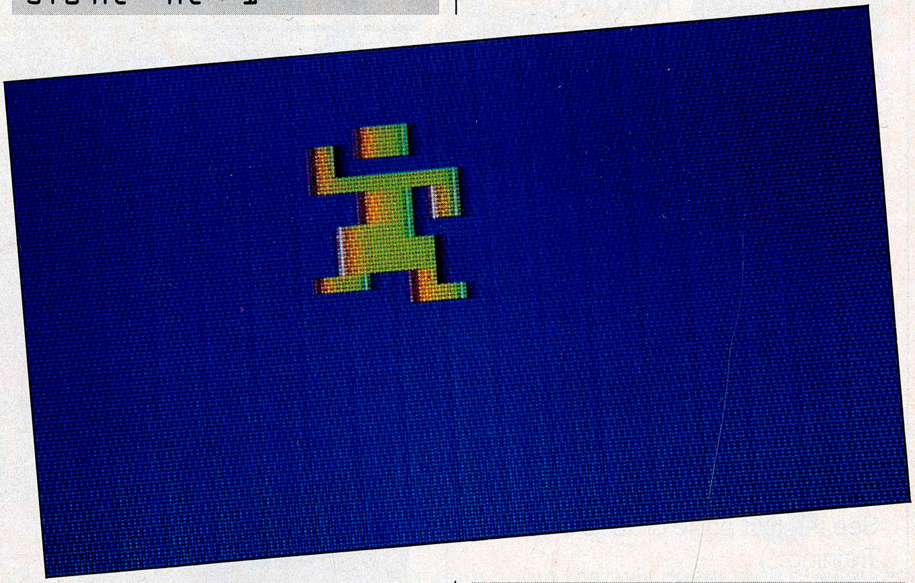
(Continued on next page)

```
    DX = 0:DY = - 1:
    GOTO 260
230 IF DI$ = "D" THEN
    DX = 0: DY = + 1:
    GOTO 260
235 IF DI$ = "L" THEN
    DX = - 1: DY = 0:
    GOTO 260
240 IF DI$ = "R" THEN
    DX = + 1: DY = 0:
    GOTO 260
245 IF DI$ = "E"
    THEN END
250 HOME : GOTO 200
260 HOME
265 HTAB 1: VTAB 21:
    INPUT "ENTER
    NUMBER OF STEPS
    {1-20}.";NS
270 IF 20 < NS OR
    NS < 1 THEN 260
300 REM * MOVE
    COUNTER = 0 *
310 MC = 0
330 REM * DO
    ANIMATION *
340 ON PT GOSUB
    500,600
350 REM * DO IT AGAIN *
360 GOTO 200
499 END
```

Now enter the subroutines. The animation is controlled in subroutines 500 and 600. Enter these lines now.

```
500 REM * DRAW RIGHT
    SIDE UP *
505 REM * AND LEFT
    SIDE DOWN *
507 REM
510 REM ** ERASE OLD
    POSITION **
515 COLOR = BC
520 GOSUB 1110
525 GOSUB 2310
530 REM * CHANGE X
    OR Y *
535 X = X + DX:Y = Y + DY
```

```
540 IF X > 35 OR Y > 35
    OR X < 4 OR Y < 4
    THEN GOSUB 4000:
    RETURN
545 GOSUB 1000:
    GOSUB 1050
550 GOSUB 2100
560 GOSUB 1300
570 MC = MC + 1
```



```
600 REM * DRAW LEFT
    SIDE UP *
605 REM * AND RIGHT
    SIDE DOWN *
610 REM * ERASE OLD
    POSITION *
615 COLOR = BC
620 GOSUB 1310
625 GOSUB 2110
630 REM * CHANGE X
    OR Y *
635 X = X + DX:Y = Y + DY
640 IF X > 35 OR Y > 35 OR
    X < 4 OR Y < 4 THEN
    GOSUB 4000: RETURN
645 GOSUB 1000:
    GOSUB 1050
650 GOSUB 1100
660 GOSUB 2300
670 MC = MC + 1
690 IF NS < = MC
    THEN RETURN
```

```
698 GOTO 500
```

Subroutine 800 draws the background color.

```
800 REM ::BACKGROUND
     COLOR::
820 COLOR = BC
```

```
830 FOR I = 0 TO 39
840 HLIN 0,39 AT I
850 NEXT
860 RETURN
```

Subroutines 1000 and 1050 tell the computer to draw the body and the head.

```
1000 REM ** DRAW
     BODY **
1005 COLOR= FC
1010 VLIN Y + 3,Y + 8
     AT X
1020 VLIN Y + 3,Y + 8
     AT X + 1
1025 COLOR= BC
1030 VLIN Y,Y + 8
     AT X - 1
1035 VLIN Y,Y + 8
     AT X + 2
1040 HLIN X,X + 1
```

(Continued on page 63)

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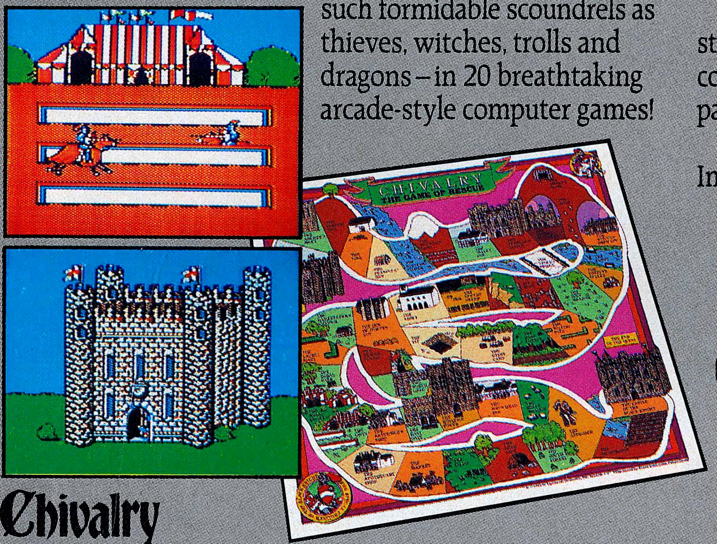

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(Continued from page 60)

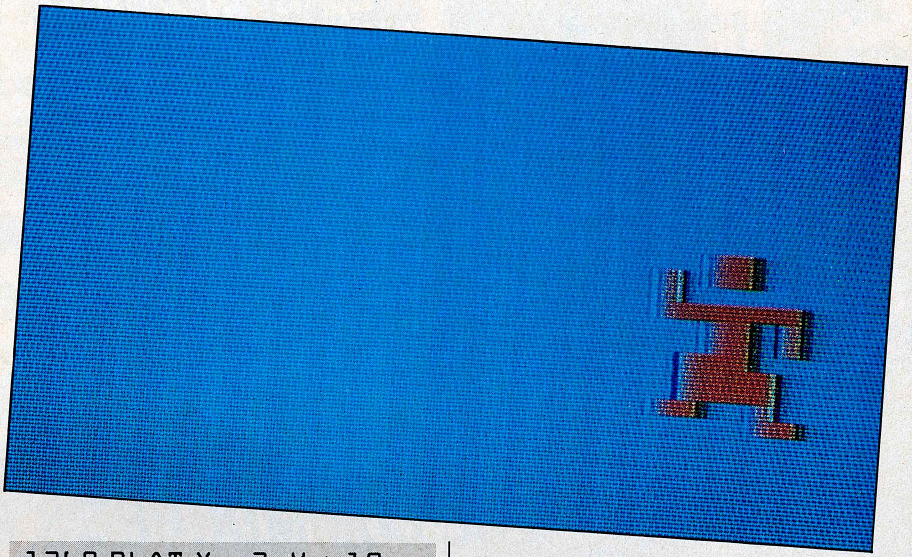
```
     AT Y + 9
1045 RETURN

1050 REM ** DRAW
     HEAD **
1055 COLOR= FC
1060 VLIN Y,Y + 1 AT X
1070 VLIN Y,Y + 1 AT
     X + 1
1080 COLOR= BC
1090 HLIN X,X + 1 AT
     Y + 2
1095 HLIN X,X + 1 AT
     Y - 1
1099 RETURN
```

To draw the right arm and leg in the up and down positions, the program calls subroutines 1100 and 1300. Type them in.

```
1100 REM * RIGHT ARM/
     LEG UP *
1103 COLOR = FC
1105 REM * RIGHT
     ARM UP *
1110 VLIN Y + 1,Y + 3
     AT X - 2
1120 PLOT X - 1,Y + 3
1125 REM * RIGHT
     LEG UP *
1130 VLIN Y + 6,Y +
     9 AT X - 1
1140 PLOT X - 2,Y + 9
1150 RETURN

1300 REM * RIGHT ARM/
     LEG DOWN *
1305 COLOR = FC
1310 REM ** RIGHT ARM
     DOWN **
1320 VLIN Y + 3,Y + 5
     AT X - 2
1330 PLOT X - 1,Y + 3
1340 REM ** RIGHT LEG
     DOWN **
1350 VLIN Y + 7,Y + 10
     AT X - 1
```



```
1360 PLOT X - 2,Y + 10
1370 RETURN
```

Subroutines 2100 and 2300 draw the left arm and leg in the up and down positions. Enter them.

```
2100 REM ** LEFT ARM
     AND LEG UP **
2103 COLOR= FC
2105 REM * LEFT ARM
     UP *
2110 VLIN Y + 1,Y + 3
     AT X + 3
2120 PLOT X + 2,Y + 3
2125 REM * LEFT LEG UP *
2130 VLIN Y + 6,Y + 9
     AT X + 2
2140 PLOT X + 3,Y + 9
2150 RETURN

2300 REM ** LEFT ARM
     AND LEG DOWN **
2305 COLOR= FC
2310 REM ** LEFT ARM
     DOWN **
2320 VLIN Y + 3,Y + 5
     AT X + 3
2330 PLOT X + 2,Y + 3
2340 REM ** LEFT LEG
     DOWN **
2350 VLIN Y + 7,Y + 10
     AT X + 2
```

```
2360 PLOT X + 3,Y + 10
2370 RETURN
```

If you move your figure too far across the screen, subroutine 4000 will let you know.

```
4000 REM * YOU'VE GONE
     TOO FAR *
4005 HOME : HTAB 1:
     VTAB 21: PRINT
     "YOU CAN GO NO
     FARTHER IN THIS
     DIRECTION."
4010 IF X > 35 THEN
     X = X - 1
4015 IF X < 4 THEN
     X = X + 1
4020 IF Y < 4 THEN
     Y = Y + 1
4025 IF Y > 35 THEN
     Y = Y - 1
4030 GOSUB 1000:
     GOSUB 1050:
     GOSUB 1100:
     GOSUB 2300
4040 HTAB 1: VTAB 23:
     INPUT "PRESS
     'RETURN' TO
     CONTINUE.";YN$
4050 RETURN
```

(Continued on next page)

Once you have entered all of the program, you can start moving the figure around the screen. After you get tired of that, you might try a few experiments. For example: what happens if you move too far in any direction? If you take out lines 540 and 640, *then* what happens if you go too far?

Something odd happens if you move the figure below the text window on your computer screen. Why does this happen? What can you do to correct this "bug?" (Hint: try changing line 640.)

Have you changed the color of the figure and the background yet? Have you changed the starting location of the figure? Can you write a routine to let the person using the program change these items as the program runs? (Hint: these lines could go between 270 and 300).

Send Us Your Programs!

We'd love to see your variations on our programs. Send them to ENTER Basic, CTW, 1 Lincoln Pl., New York, NY 10023. We'll print our favorites and send the winners ENTER t-shirts. If you'd like the Atari adaptation, send us a self-addressed stamped envelope to the same address, and mark it BOXY ATARI.

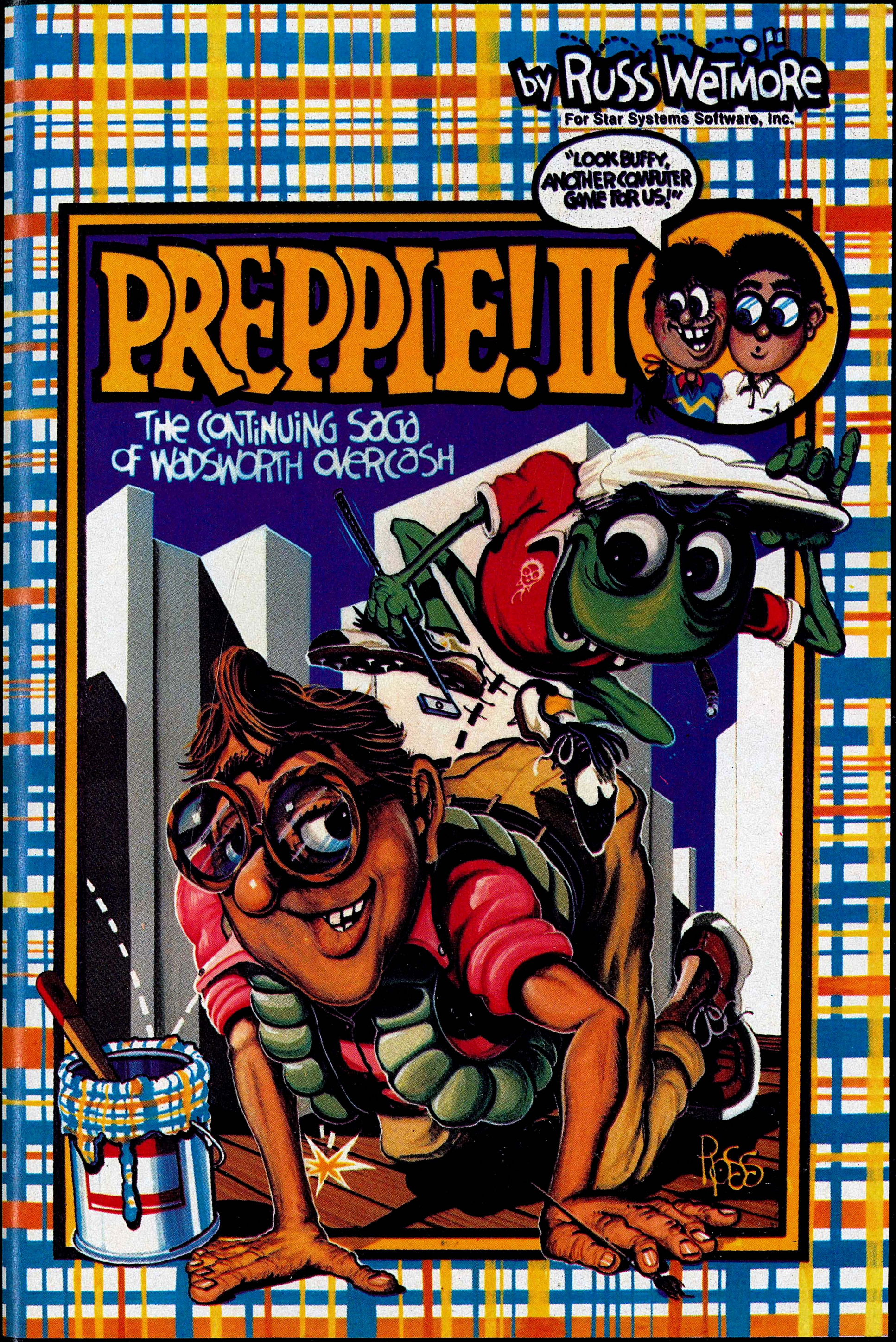
THE COMMODORE'S FLAG

BY PEARL F. COHEN

Here's a program to run on your Commodore 64 that paints an American flag. It uses one of the Commodore's special graphics characters, the star. If you're feeling creative, see if you can make a program for the 64's sound system that will play a few notes of the *Star Spangled Banner* while your flag unfurls.

```
5    POKE 53280,14: POKE
     53281,6
10   PRINT CHR${147}:
     REM CLEAR SCREEN
20   C=55296+2*40:S=
     1024+2*40:
     GOSUB300: REM GO
     PAINT STARS
30   FORN=1TO4:
     C=C+40:S=S+40:
     GOSUB400:REM GO
     PAINT MORE STARS
40   C=C+40:S=S+40:
     GOSUB300:NEXTN
50   C=55296+21:
     S=1024+21
60   FORN=1TO3:GOSUB
     500:NEXTN:REM GO
     PAINT UPPER STRIPES
70   C=C-21:S=S-21
80   GOSUB800:REM GO
     PAINT LOWER STRIPES
90   FORL=0TO39:
     POKEC+ L,
     2:POKES+,160:
     NEXTL:REM PAINT
     LAST STRIPE
99   REM LOOP IN
     STATEMENT 100 WHILE
     FLAG IS BEING
     DISPLAYED
100 GOTO100
140 REM TO QUIT HIT "RUN
     STOP" AND HOLD IT AS
     YOU HIT "RESTORE"
299 REM SUB300 AND
     SUB400 PAINT THE
     STARS
300 FORX=2TO17STEP3:
     POKES+X,42:POKES +
     X+1,32:POKES+
     X+2,32:POKEC+X,
     1:NEXTX: RETURN
400 FORY=2TO14
     STEP3:POKES+Y,
     32:POKES+Y
     +1,42:POKESS
     +Y+2,32:
     POKEC+Y+1,1:
     NEXTY
410 RETURN
499 REM SUB500 AND
     SUB800 PAINT THE
     STRIPES
500 FORP=2TO1STEP-1:
     FORR=1TO2:
     FORL=0TO18
510 POKEC+L,P:
     POKES+L,160: NEXTL
520 C=C+40:S=S+40:
     NEXTR: NEXTP:
     RETURN
800 FORN=1TO3:FORP
     =2TO1STEP-1:FORR
     =1TO2:FORL=0TO39
810 POKEC+L,P:POKES
     +L,160:NEXTL
820 C=C+40:S=S+40:
     NEXTR:NEXTP:
     NEXTN:RETURN
```

YOU WON'T BELIEVE WHAT WE HAVE DONE TO WADSWORTH THIS TIME...


by RUSS WETMORE
For Star Systems Software, Inc.
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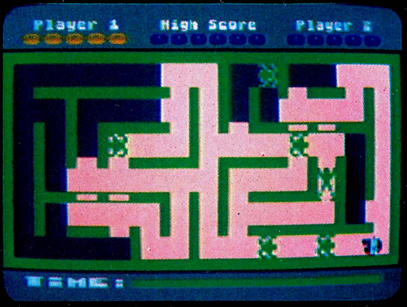
PREPPIE! II
THE CONTINUING SAGA OF WADSWORTH OVERCASH
ROSS



The music is simply marvelous — the graphics are just fabulous!

LET'S JUST SAY HE'S IN FOR A REAL LEARNING EXPERIENCE!

If you enjoyed "PREPPIE!" you're going to love "PREPPIE! II". You take the controls moving that weenie of a prepster, Wadsworth Overcash, through his college debut. Wadsworth, having survived his perilous summer on the golf course, now faces his fraternity's Freshman Rush. It's simply incredible what our monogrammed young friend must go through. Will Wadsworth survive to be the K.P.O.C. (Key Prep On Campus)?

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— *William Taft Wolf*

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"How dare you call Wadsworth a weenie! You "no-talent." I'll see to it you never get into this club again.

—*Miss Abigail Smythe Overcash*
(during a recent interview)

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Award-Winning Hits for your Commodore

CREATIVE SOFTWARE
PRESENTS
CHOPLIFTER
CARTRIDGE FOR USE WITH THE COMMODORE VIC-20
NO ADDITIONAL MEMORY REQUIRED

CHOPLIFTER*
For the Commodore VIC-20.

Those are our men they're holding hostage! We don't care how you do it, but you've got to shoot your way in there and bring 'em back alive. You've got three choppers, probably not enough but it's all we can spare. And the enemy camp is pretty heavily fortified. With tanks, jetfighters and truly nasty laser bombs. Okay, maybe it's a suicide mission, but somebody's got to do it. Dozens of innocent lives are at stake. We're counting on you... don't let them down!

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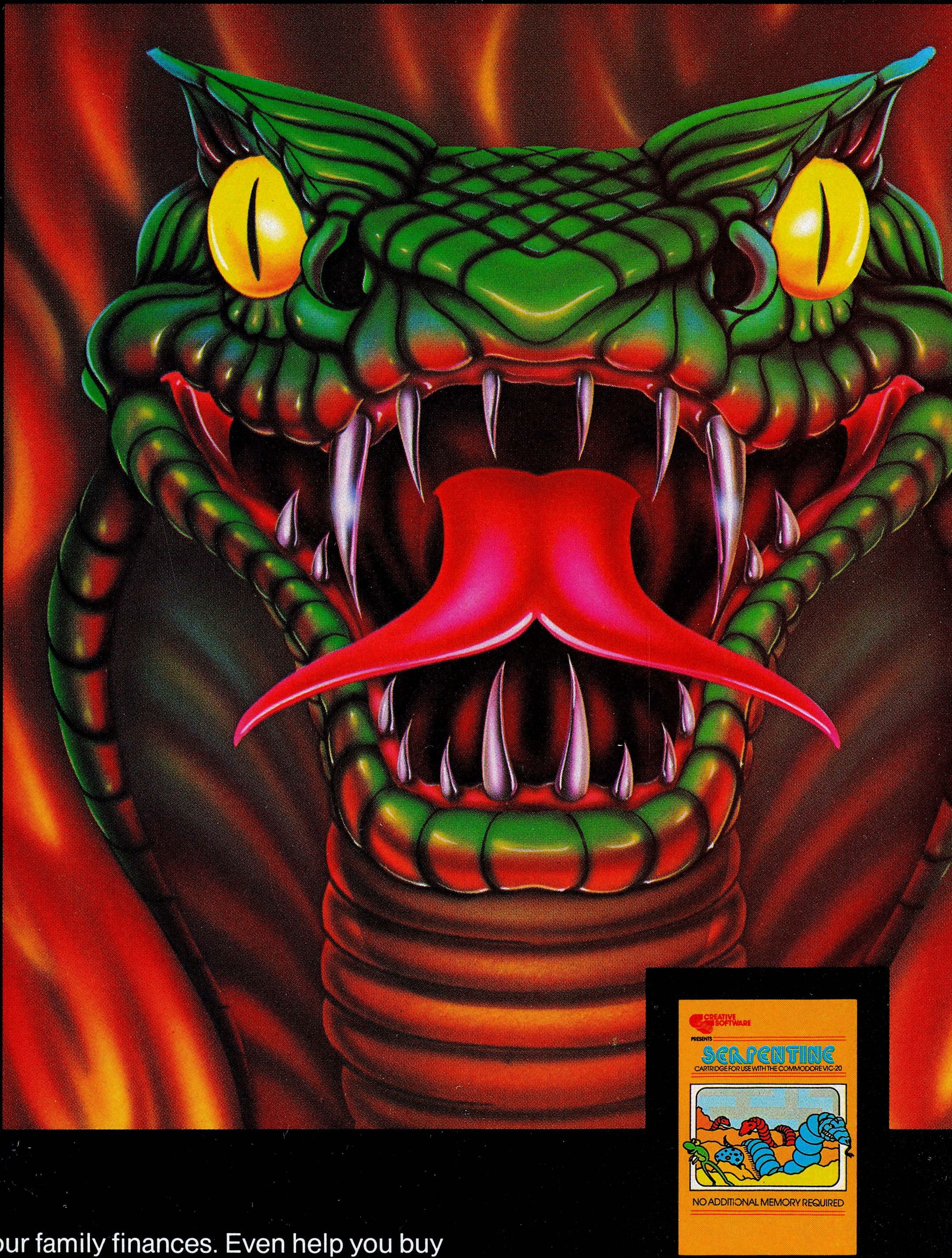
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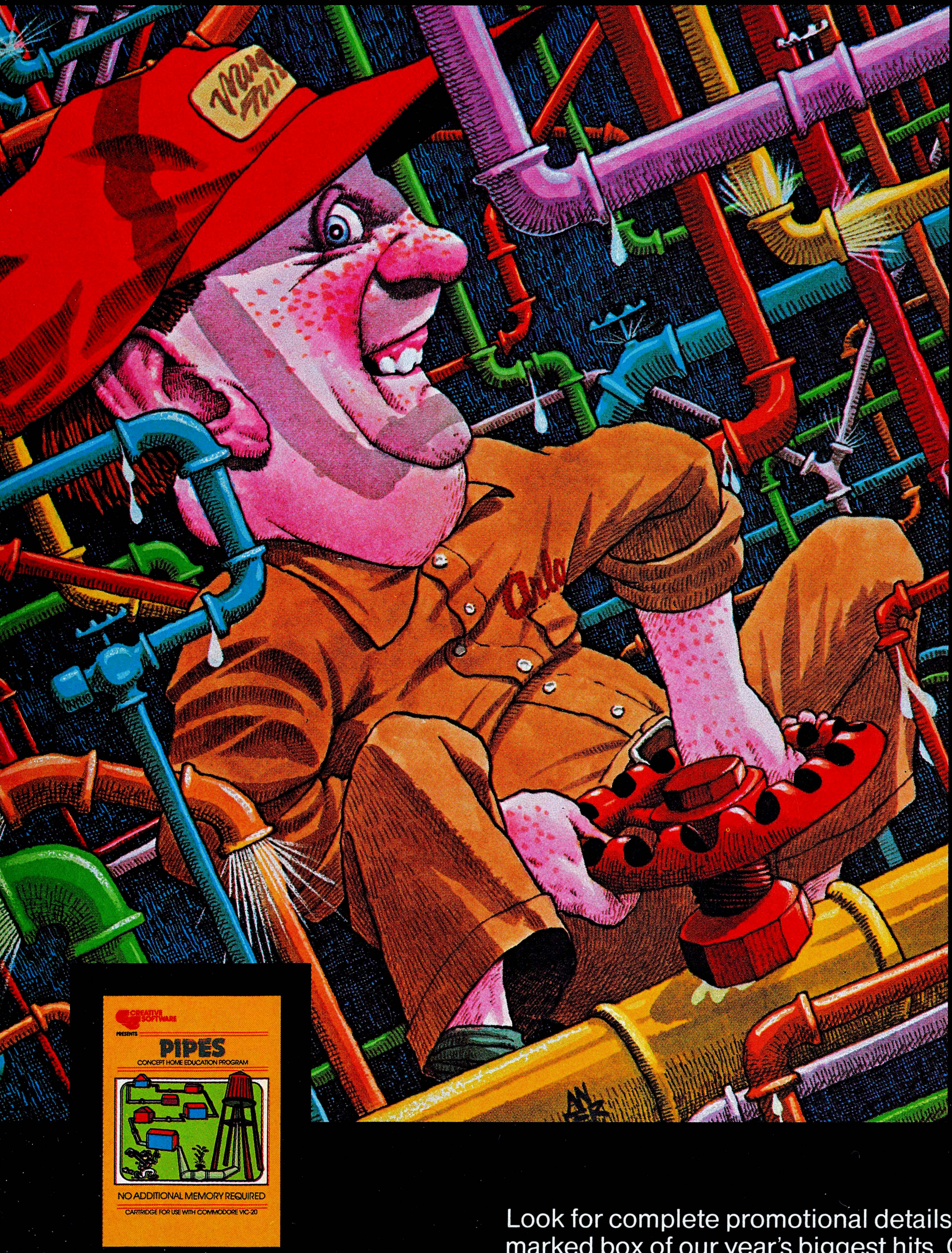
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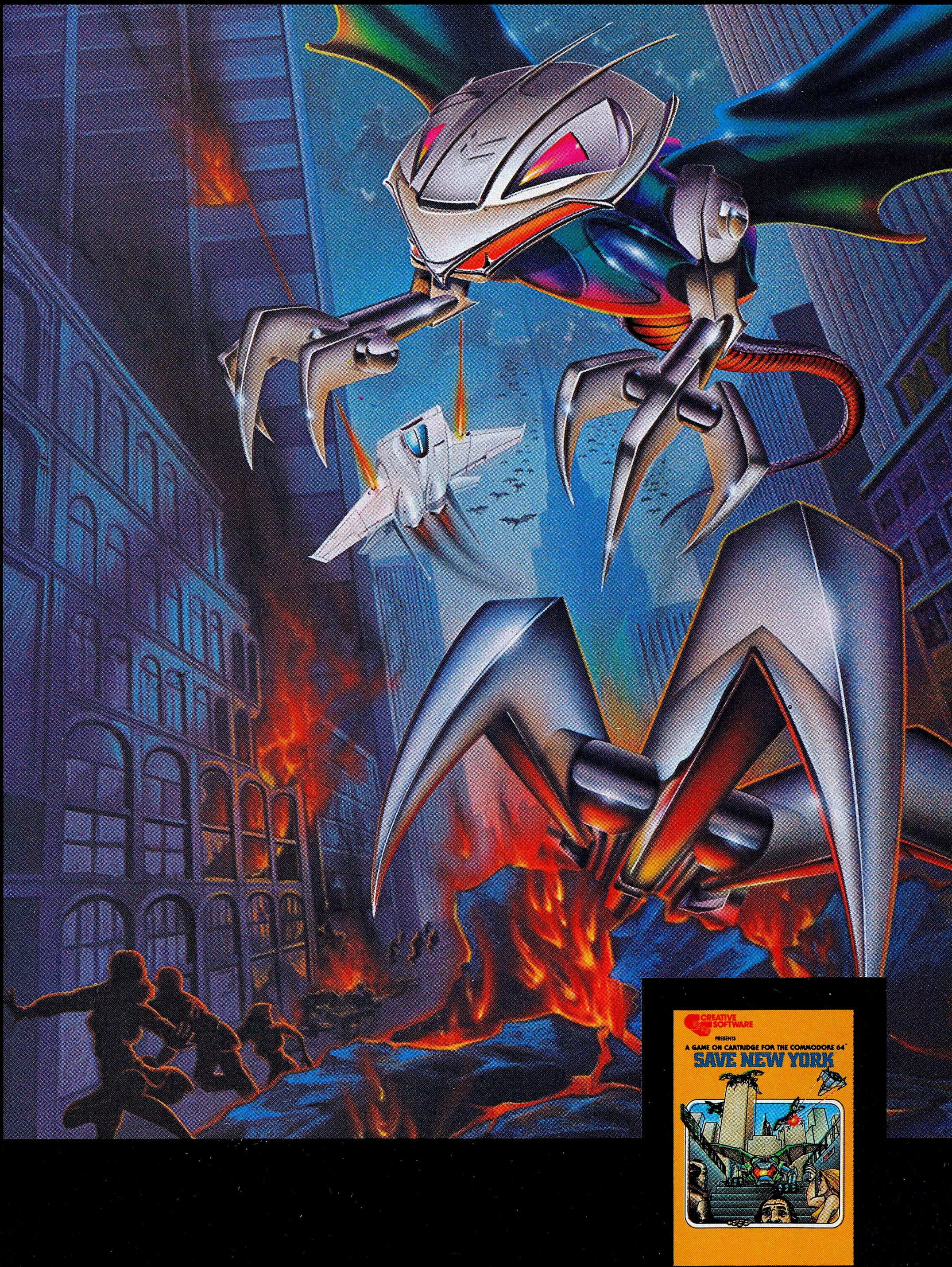
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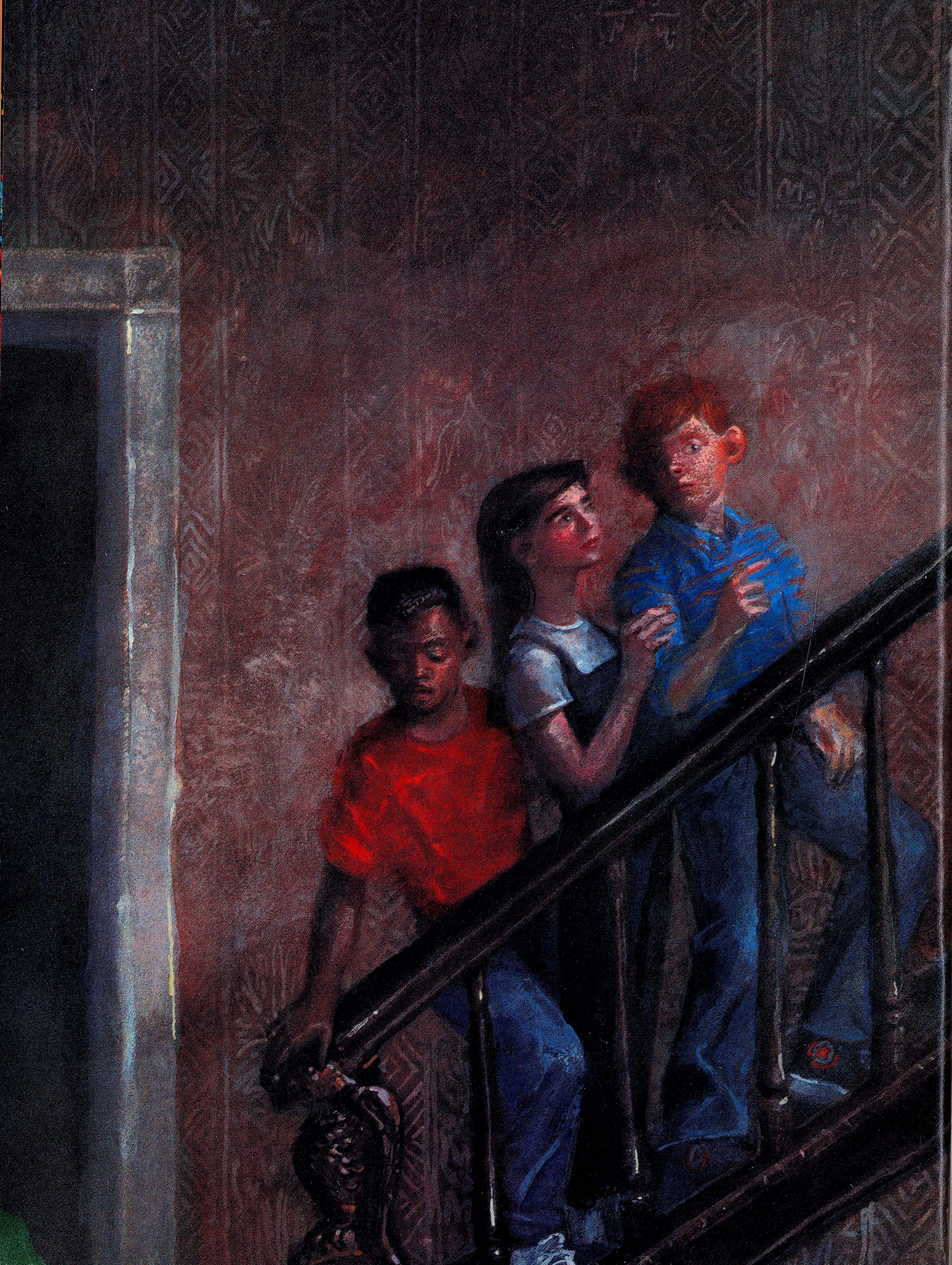

A KATIE PARKER COMPUTER MYSTERY

THE CASE OF THE *HUNGRY HOUSE*

BY DAVID BENSON POWELL

PART ONE

Jonathan Ellis and his big brother Scott shined their flashlights on each other's faces, and then on the house. In the moonlight, the old Nichols' place looked as uninviting as it was empty. Rumor had it that the place was haunted. And, now that Jonathan stood in its shadow, he really didn't like being there.

"Mom's going to kill us if she finds out," he whispered.

"She won't even know we're gone," Scott replied. He traced his light up the house's front wall, until the beam hit a window high above them on the third floor. "We'll just go inside for a few minutes. Maybe we'll luck out and see a real ghost."

"I wouldn't call it lucky if we see one," Jonathan whispered back.

His brother climbed the porch stairs and tried the doorknob. It turned easily. Disappointment added to Jonathan's fear.

"Well, here we go," Scott said. He pushed the door open and waited in the doorway. His blond hair blew wildly across his face.

Jonathan sighed and slowly climbed the stairs. Through the doorway, he could see a large staircase. Moonlight spattered through windows at its top, and lit a bright path down the steps, right to where Scott stood.

Jonathan stopped. "I'm not going in," he said.

Scott didn't reply.

"Serious, I'm not going in. If you want to be stupid, go ahead, but count me out."

"Don't be so scared," Scott said. "I'm here."

"Big deal."

"OK, if you want to chicken out, go ahead. But I'm looking around anyway!" Scott turned and entered the house, slamming the door behind him.

Jonathan was still on the porch when he heard a sound: Banging...loud banging...inside the house.

"Maybe that's Scott," Jonathan mumbled..."Maybe it's something *with* Scott," he thought.

Jonathan grasped the doorknob. This time, it refused to turn. He fled the porch in a leap that cleared the stairs, and ran across the yard as fast as he could.

Late the next morning, Katie Parker and her friend Don Farrell were arguing—again. Nine times out of 10 it seemed that "Sherlock," her computer, caused their spats. Don really didn't like the thing. History and photography were more his speed. But that was OK.

Though a little older than Katie's 14 years, Don found it easy to treat her as an equal...except where that machine was concerned. One of these days, Don thought, he'd get Sherlock alone—just he and it—and either figure it out, or give it a good kick.

"That computer's display really isn't bright enough to photograph," Don grumbled for the tenth time. "If you really want me to take pictures of your 'computer art,' I'll have to use faster film."

"OK, go ahead."

"The film will cost more," Don explained.

"How much more?"

Don's answer was drowned out by a wave of honks from Katie's doorbell. "Excuse me, the foghorn bellows," Katie said, stepping to the door. She opened it, and recognized her friend Jonathan Ellis. He had been crying. His eyes were almost as red as his hair.

"Scott's disappeared," he said.

"Disappeared?" Katie asked.

"Last night," the boy continued, sinking into a chair

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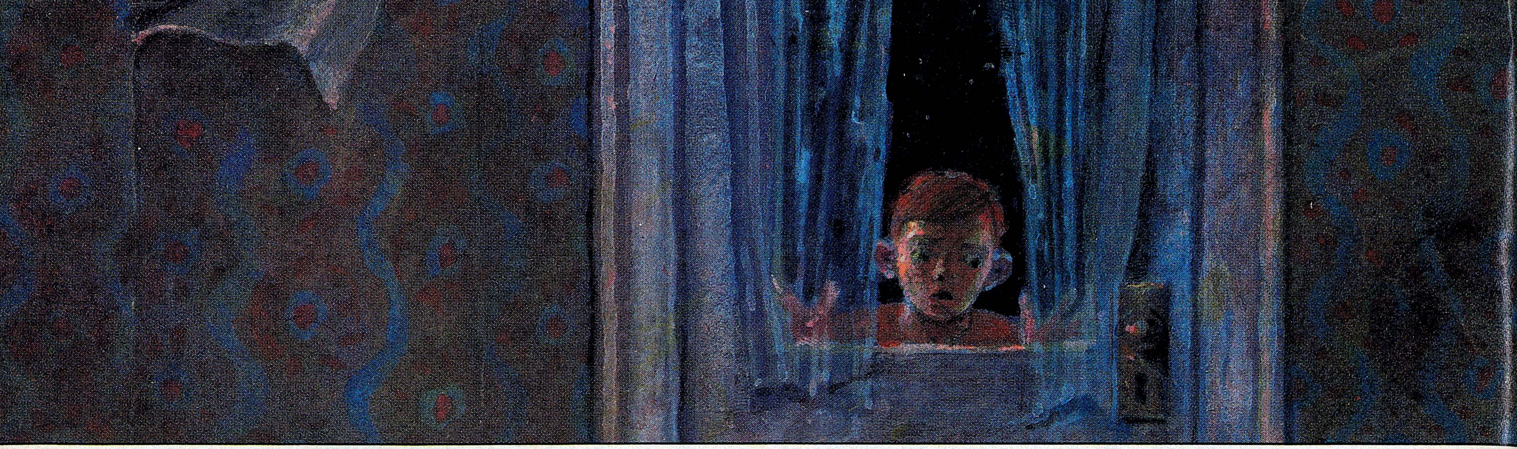


The moonlight, the wind—it was all so creepy...Scott slammed the door, then a banging sound started inside and the doorknob wouldn't turn.

near the front door. "Scott and I sneaked out to explore the old haunted Nichols' house. Actually, it was his idea, and he went in. But I couldn't, so I went home. Now it's morning and he still hasn't returned."

"We'll search for him," Katie said, glancing toward Don in the next room. Don turned around, parked his camera on top of the computer, and joined Katie.

"You say you *couldn't* enter the house," Katie continued. "Why not?"

"I got scared," Jonathan said. "The moonlight, the wind—it was all so creepy. And Scott left me alone on the front porch. Then this banging sound started and the doorknob wouldn't turn, and..."

"OK, Jon, time out, come up for air. I get the idea," Katie said. "Of course, your parents know..."

"Yeah, we and the police searched the house this morning. The police said they were going to search in town, but I just *know* Scott never left the house."

'Why do you say that?" Don interrupted, his interest growing.

"Scott's pocket knife," Jonathan continued. "We found it on the attic floor. The blade was bent. Scott never went...goes anywhere without it. He wouldn't just leave it lying around like that."

"We should go over to the Nichols' place now, and take a look around," Katie said.

Before turning off the computer, Katie stored her latest Art Creation in a diskette file. That done, she rushed out of the house, with Jonathan close behind.

Don reclaimed his camera, saw that he was alone, and gave Sherlock a playful kick.

It was noon, and quite hot, when the three walked through a black iron fence into the Nichols' yard. As they climbed the porch stairs, Jonathan stopped and pointed. "We...Scott went in here."

The police had nailed a board across the front door to discourage other would-be explorers. Katie pulled at the board, but Don didn't look like he approved.

"We have to get in, don't we?" she said challengingly. The three, pulling together, ripped the board away. A piece of the door came with it. They opened the door and walked inside.

In front of them, a large, dusty staircase towered up.

"Hello, Scott, can you hear us?" Katie shouted.

No answer.

"Jonathan, show us where you found Scott's knife," Katie said, almost in a whisper.

He led them up several flights of stairs, into the attic, and eventually, into a hot little box of a room. It was empty, except for an old wooden cabinet pressed back into a far corner. "This is an *old* piece," Katie said. "Probably has been here as long as the house has."

"The knife was right where you're standing," Jonathan said suddenly, pointing at Katie's feet.

She stepped back, looked at the floor, at Jonathan, then at the cabinet. "Did you look in here?"

"The police did. It was empty," Jonathan answered.

Katie opened the cabinet's doors anyway. It didn't amaze her that Jonathan was right.

"Why was the knife left here?" she thought out loud. She tried to pull the cabinet away from the wall. It refused to budge. She then leaned inside it, and rapped its rear wall several times with her knuckles.

"Well, no secret panels," she announced. "The wood sounds the same everywhere. OK, let's go

They explored the entire third floor, and the second. "Nothing," Katie sighed as the three descended the stairs to the first floor. "The place is so huge! Well, we're doing no good standing here," Katie continued. "Let's finish searching the first floor. By the way, Jonathan, is there a basement to this place?"

"No."

"OK, let's finish up. It's getting dark."

By the time they stopped searching, a gentle rain drummed against the house. "We'd better go home," Katie said reluctantly. "We can try again tomorrow."

"But what if Scott's here?" Jonathan insisted.

"If he is, he'll be inside and dry," Katie said.

"And scared and hungry," Jonathan replied.

They dropped Jonathan off at his home. When they were alone, Don turned to Katie and asked: "Why did you make that remark about secret panels? You know, when we were in the attic?"

"Well, why not?" the young detective answered. She started counting on her fingers. "POINT—a boy mysteriously disappears at night, in a supposedly haunted house. POINT—his only trace is a favorite knife, found near an old cabinet. POINT—in the movies, this would mean the cabinet contains a secret panel leading to a hidden room. POINT—you can always tell where the panel is by tapping and listening for a hollow sound. POINT— movies aren't always right."

"I see," Don sympathized, grinning. "You may not know it, but the idea still isn't so farfetched."

"How so?"

‘Well, I learned something interesting about the Nichols' house when I was researching a paper for history class. Just before the Civil War, many slaves escaped the South through a secret network called the Underground Railroad. The slaves' goal was to reach freedom in Canada, and many escaped through New England.

"This was very risky business," Don continued. "Helping the slaves was actually against a Federal law: the Fugitive Slave Act. Anyone who was caught—slave or helper—was punished severely. So, many churches and homes in the 'Railroad' added secret rooms, where runaway slaves were hidden till it was safe to leave."

"And you discovered that the owners of the Nichols' place had been helping slaves?" Katie asked.

"A *lot* of slaves; the house was a major stop on the Underground Railroad," Don responded. "I learned that from some old letters in the library. But the letters—written by the original owners, who built the Nichols' place—never mentioned any secret rooms. And the house's owners were never actually caught helping slaves. So I wouldn't be surprised if that house has a very large secret room—one as hard to escape as it is to find."

"And which Scott Ellis somehow stumbled into," Katie guessed.

"I hope it's as harmless as that," Don said.

"I hope so too."

Much later, Katie Parker lay on her bed. A sea breeze curled through the window's lace curtains. She took a deep sniff at the salt air, and slowly fell asleep—wondering how it must feel to be alone, in the dark, in a secret place you cannot leave.

By seven o'clock the next morning, Katie already was on the phone.

"Don. You awake?"

"Sort of."

"Well, sort yourself out and get over here. I've got an idea how we can find Scott...if he's in that house at all. And Sherlock will do most of the work."

A short time later, Don and Jonathan arrived at Katie's home. Jonathan looked calmer, less shaken-up than he had the day before. Don just looked tired.

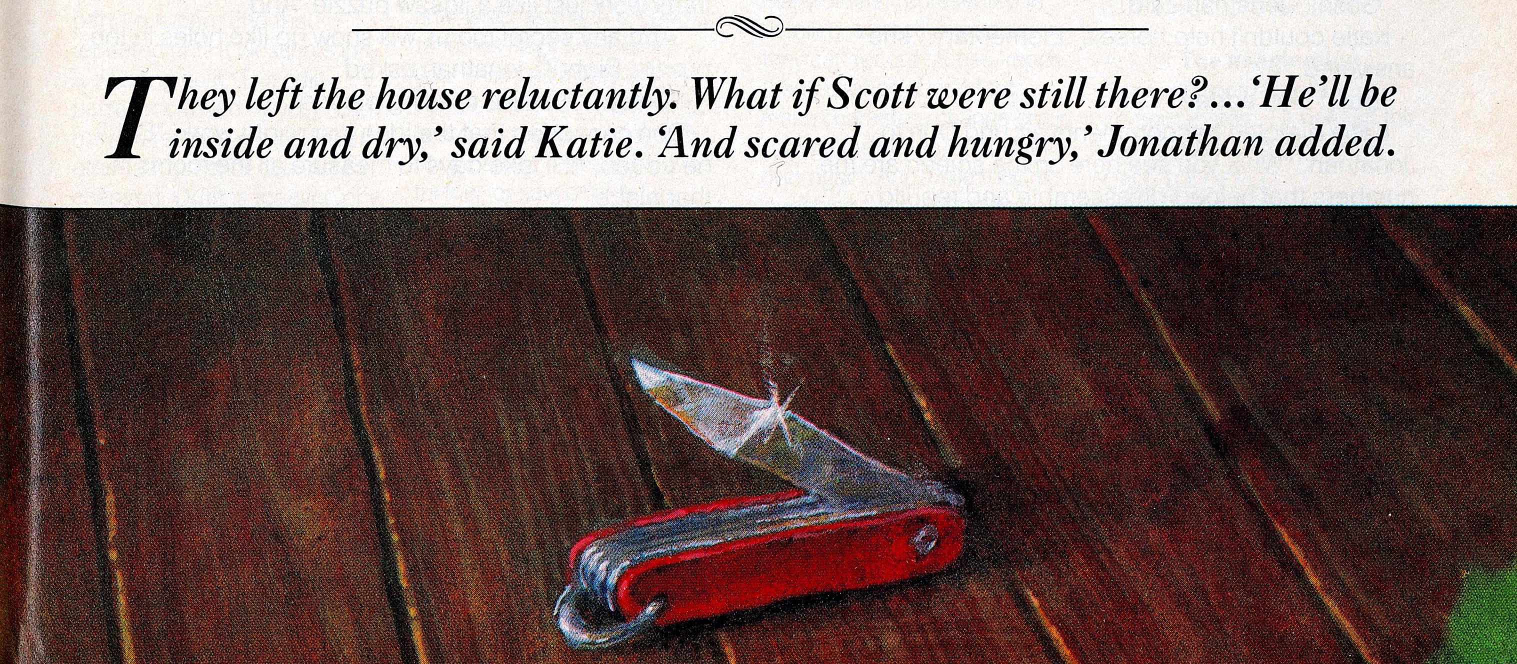
The young detective marched the boys into her computer room, powered up Sherlock, inserted a data diskette, typed "DIRECTORY" on the keyboard, and scanned down the words on the display. Her finger stopped halfway down the list, and she typed "RE.BUILD." The color monitor jumped into life with a table of numbers.

"Remember this?" she asked Don over her shoulder.

He walked to her side, put his hands in his pockets and leaned toward the screen. "Yeah," he finally said. "Marmoor Castle."

Katie turned to Jonathan. "My family took a working vacation in England last year. Marmoor Castle, near

They left the house reluctantly. What if Scott were still there?...'He'll be inside and dry,' said Katie. 'And scared and hungry,' Jonathan added.



Katie said 'I can make the computer draw a three-dimensional picture of the house'...'But how will that help us find Scott?' asked Jonathan.

where we stayed, was being moved to a new location."

"The whole castle?" Jonathan asked, his eyes widening.

"Yes," Don continued, "stone by stone. I was there, too. While Katie marked numbers on the stones and typed the numbers into this machine here, I helped haul the stones into trucks. Mr. Parker was the contractor on the job, and Katie had convinced him that she and I would be a-b-s-o-l-u-t-e-l-y i-n-d-i-s-p-e-n-s-a-b-l-e to the project. It was a long time before my back forgave her for that."

'Poor baby," Katie said soothingly, then turned back to Jonathan. "I marked each stone with numbers, called coordinates, that told exactly where the stone was located in the castle walls. With all this data in the computer, Dad could put the stones into storage and rebuild the castle anywhere he wanted—just like a giant jigsaw puzzle."

"Gosh," Jonathan said.

Katie couldn't help herself. "Elementary," she answered.

"Bull," Don added.

Katie directed her comments around Don to Jonathan. "What you see here on the screen are the numbers that helped disassemble and rebuild Marmoor Castle. But the program could be applied to any building—castle or house."

"Please don't say we're going to tear the old Nichols' place apart," Don said, rubbing his back.

"Of course not," Katie answered. "But we are going to rebuild it—with Sherlock's help!"

Jonathan stared at the computer. "How will this help us find Scott?"

"I'm coming to that," she continued. "We'll take detailed measurements of every room in the house. The rooms all seemed to be about 12 feet high, so we won't have to worry about height. But we will measure lengths and widths. Sherlock will take the measurements, chew on them a little, and draw a three-dimensional picture of the house with all its rooms. I'll have to change the Marmoor program a little, to turn the numbers into pictures. However," she patted the computer, "the basic program is right here."

Don started to pace. "But, if Scott's in the house at all, he's trapped in a room we can neither find nor measure. So how..."

"Of course, we won't be able to measure any secret rooms," Katie admitted, "but we'll measure *around* them. We'll measure the locations of every corner, window and door in the place—along inside *and* outside walls. I want every distance we can get—corner-to-corner, corner-to-door, window-to-window, window-to-door. Knowing the windows' positions will help us relate the rooms to the outside walls, doors will help us link the rooms together, and the corners will tell us where the rooms begin and end. With all this data, Sherlock can snap the rooms back into the house's framework just like a jigsaw puzzle. And..."

"And any secret rooms will show up like holes in the puzzle. Right?" Jonathan asked.

"Exactly. Just like missing pieces."

Don conceded that the idea just might work. "But," he added, "it'll take days to measure all the rooms in that place."

"Without help, yes, it would," Katie admitted, looking at her watch. "But if we round up some help, the job will go a lot faster. It's 9:30 now. Let's call as many friends as we can. Tell them to meet us at the old Nichols' place in one hour. Tell them to bring pencils, paper, flashlights and tape measures. And tell them we're going to find Scott Ellis...today."

Is Katie right? Will Sherlock save the day? Does Don get to kick the computer again? Find out in next month's ENTER, in the conclusion of "The Case of the Hungry House."

NEXT TIME YOUR KIDS ASK HOW TO USE THE COMPUTER, LET THEM USE THEIR IMAGINATION.

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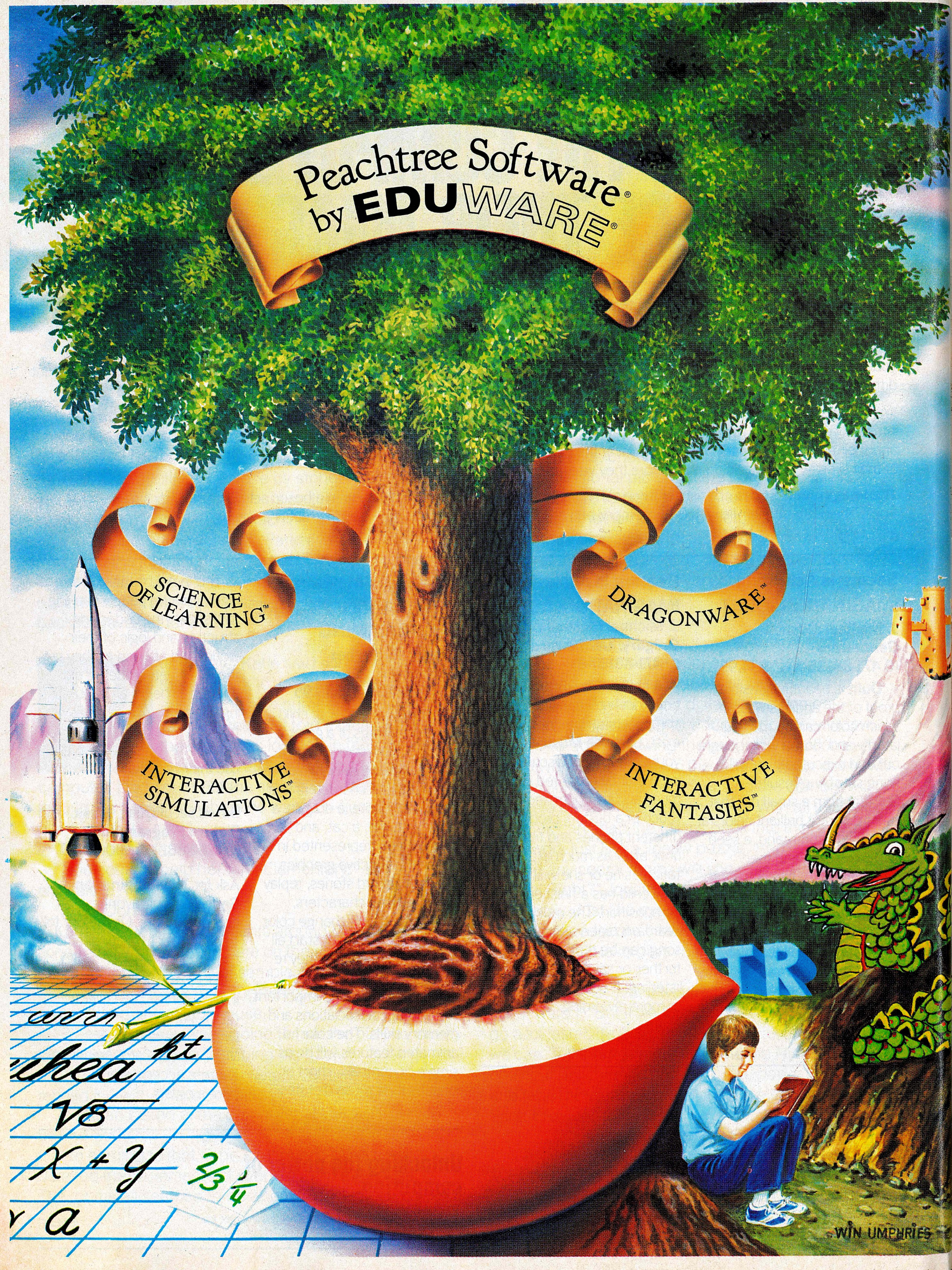
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PQ F83

game plan

DOING MR. DO!

BY RON DUBREN

A new game hits the arcade. You drop in a quarter or two just because it's new. But if the game isn't challenging, you'll stop dropping quarters—and that game will quickly drop from sight.

Only a few games have real staying power, challenging you to play again and again. One such game is *Mr. Do!* This arcade original from Universal has already spun off a home version from Coleco and a sequel called *Mr. Do's Castle,* yet it remains a top coin-op hit.

Object of the Game

You control Mr. Do, a frisky polka-dotted clown who must mow a path of tunnels through an orchard in order to eat all the cherries. Your enemies are the red meanies, who come out of the central holding pen one at a time. Eat all the cherries or eliminate all the red meanies and you'll win a new screen. There are 10 different screens, after which the game repeats at a more difficult level.

Watch out for those red meanies. There are only five at first, but they get faster, smarter and more numerous as the game goes on. Run Mr. Do into a red meanie and whoops!—you lose a life. Lose three lives and the game is over.

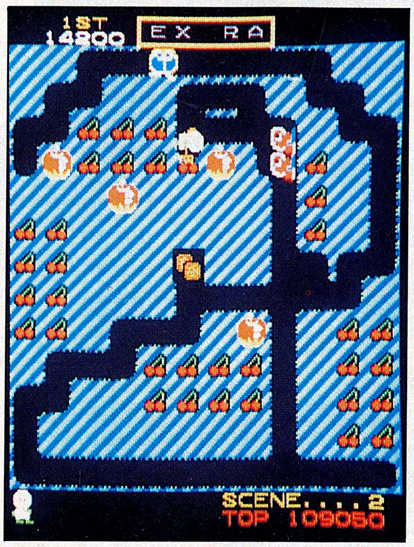
But you can *get* those red meanies, too. You have two weapons—the power ball and the apples.

The apples are your main defense, but it's the power ball that gives this game a special twist. The power ball bounces off tunnel walls and can even turn corners on its way to a red meanie target. But use your power wisely. You carry only a single power ball, and every time it's thrown, you must wait for it to return before throwing again.

When using the power ball, remember these tips:

- *Don't open up too many tunnels.* The more tunnels, the greater the chance the ball will go off on a wild goose chase.

- *Shoot the ball into long tunnels with no side exits.* That way, it will stay on target.



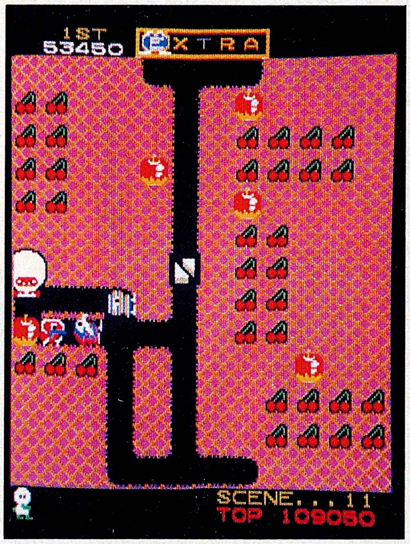
Menacing meanies make Mr. Do one clown with no time to clown around.

- *Throw the ball only when you have a specific target in mind.* Otherwise, your power ball may be gone when you need it most.

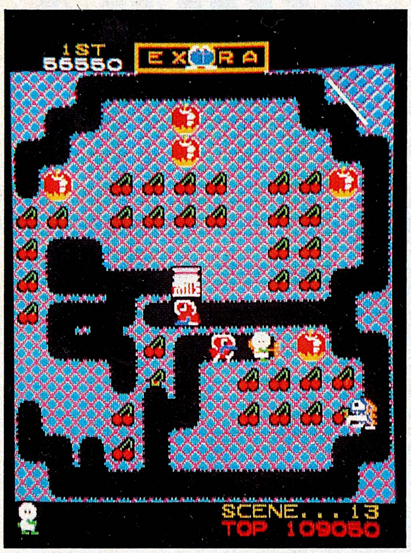
Finally, remember that the power ball is something special. Use it when you really need it. Then, when the red meanies have you cornered, you'll have your power ball handy to help you escape.

Strategies for Meanie Elimination

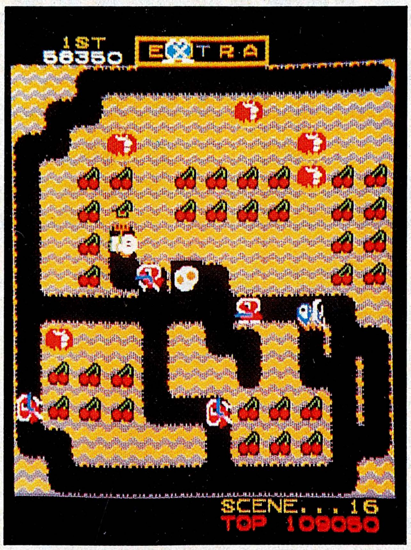
The best way to eliminate a red meanie is to lure it under an apple



The power ball can bounce around corners and be Mr. Do's best defense.



By chomping cherries Mr. Do moves to new screens.



Bopping blue meanies can add a life. Grab a diamond and get a surprise!

as it follows in your tracks. Crush! Splat! Another red meanie flattened!

The apples are scattered around the orchard, and you must learn how to use them if you want to win.

Here are some effective tactics:

- *Clear long up-and-down tunnels into which you lure the red meanies, then go straight up to the apple.* Wait just beneath the apple and it won't be released. Then, when the meanies are close, run off to one side or the other and the apple will make apple sauce of those red meanies.

- *Clear a tunnel left or right under an apple and let the apple drop to your level. Then, reverse direction* and push the apple to the edge of a long tunnel—just enough to block the passage. Now, wait for red meanies—not one, but many—to bunch up in the bottleneck you've caused. One nudge and it's apples away—goodbye meanies!

- *Be careful when moving under an apple.* Move quickly or it will drop on *your* head.

Once you are good at using the apples and power ball, go after those red meanies. But be prepared: as the game goes on the red meanies no longer need to follow your tracks. They can create their own paths. When this happens, you won't have time to eat cherries. It's a head-on battle with the red meanies—go get 'em!

Singing (and Evading) the Blues

As if *Mr. Do!* didn't have enough problems, he must also face another adversary—the blue meanies.

A blue meanie is perched at the top of the screen, hopping across five letters that spell E-X-T-R-A. Every time you score an additional 5,000 points, the blue meanie is released with a letter across its chest. Destroy the blue meanie and you earn that letter. Spell "EXTRA" and you earn an extra Mr. Do.

When battling blue meanies, remember:

- *Keep track of your letters.* Don't waste apples or power ball shots on letters you've already earned.

- *Time your 5,000 point intervals.* When you have played a while, you'll be able to make them happen just when the blue meanie is on the letter you still need.

Just Desserts

Chasing meanies and eating cherries make Mr. Do hungry for dessert. You can get that juicy dessert—and 1,000 points on the first screen and 500 points on other screens—by going to the holding pen at the center of the screen. After the last red meanie has been released, that holding pen turns into a luscious treat.

It's a great dessert, except for one thing—eating the dessert releases four blue meanies, and only one has a letter on its chest.

These wily guys chomp right through apples that block their path. The best way to battle them is to shoot the lettered blue meanie as soon as possible. That does more than give you another letter—it also eliminates all the other unlettered blue meanies on the screen.

Masters of *Mr. Do!* know it's best to wait until only one red meanie remains before eating dessert. That red meanie will freeze in its tracks when the blue meanies are released—and will be easy to deal with when the blues are banished.

Mr. Do! pros also know the game offers a diamond surprise. This rare jewel appears at random moments—and may not appear at all during the course of a game. If it does, drop everything and go after it. The diamond surprise, you see, is more than just an extra life—it's a free game.

RON DUBREN is a game designer and freelance writer.

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AN OPEN AND SHUT CASE

UNDERSTANDING BINARY, COMPUTERS' SPECIAL CODE

Computers can't read. They can't count. They are nothing more than collections of electronic switches. When the computer receives one kind of electronic signal, switches open. When it gets another kind of signal, switches close. It's this pattern of opened and closed switches that determines *what* the computer does.

When computers were first invented, people actually had to sit down at a switchboard to open and close the switches by hand. This worked, but it was very slow. In order to make computers work faster, there had to be a way to give the computer rules for opening and closing its switches.

Computer developers decided to use a system called *Binary Arithmetic.* Binary arithmetic has only two numbers—zero and one. This simple system works well with computers because the two numbers correspond to *off* and *on*—the only kind of command computer switches can handle. Using the binary numbers as a kind of code, computer inventors began building computers that could work with instructions in the form of zeros and ones. *Zero* meant a switch stayed open. When the switch was open, the electricity stopped. So zero meant "off." *One* meant the switch was closed, which let electricity keep moving through the switch. So, one meant "on."

In this way, people could tell computers what to do. For instance, a designer could make a pattern of switches (like Off-Off-Off-On, or 0001) stand for the letter "A." Then, when a person using the computer typed in 0-0-0-1, the computer would take this instruction and print the letter A.

Today, computer languages have been created that allow us to use ordinary words and numbers to talk to computers. But, inside the machine, every letter or number we type is still converted into binary zeros and ones (or on-and-off signals) before the computer reads it.

In our game on the next page, pennies represent switches that can be either open or closed. Tails stands for zero, the code number that opens a switch. Heads stands for one, the code number that closes a switch. Playing the game, you are opening and closing the switches. Of course, your computer does the switching in a fraction of a second. We expect your game will last a lot longer.

—Mike Edelhart

BINARY FLIP

BY BILL McCAY

Binary Flip is a board game for two players. When you play, you'll move pieces like a computer moves switches, flicking them on and off. Your switches will be coins. The *heads* will be *on*, and the *tails* will be *off.* When you have flipped all your switches to the right order, and have reached your end space, you win. But watch out—if your opponent flips one of your pieces before you reach "end," you'll have to keep switching.

Object of the Game

You want to set your "switch" coins to the right order: ON, OFF, ON, OFF, ON (or Heads, Tails, Heads, Tails, Heads). This is indicated on the "switch spaces" on the board.

What You Need

Six coins for each player (it's best to use six dimes and six pennies).

One of two dice.

(Continued on next page)

BINARY

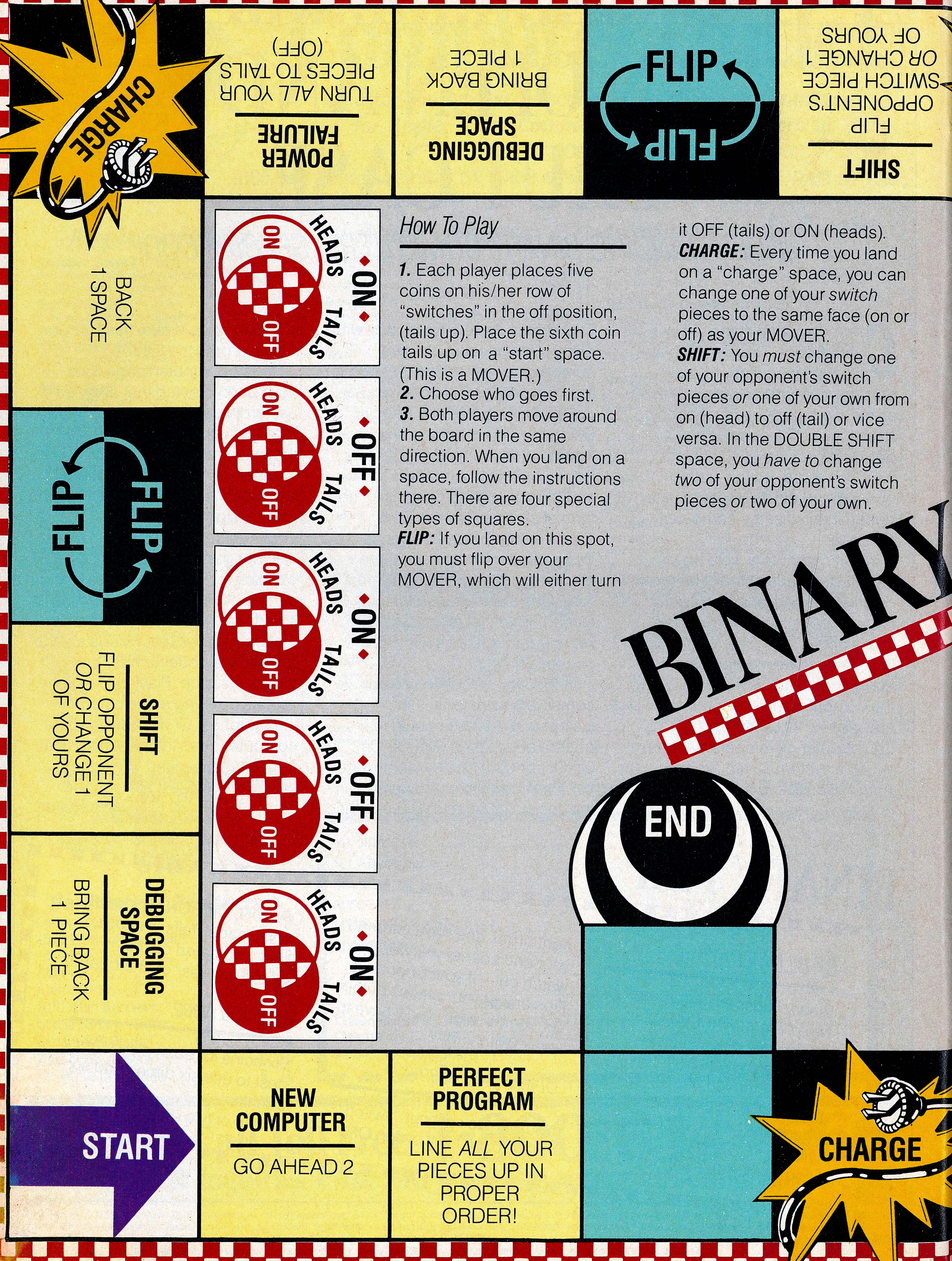
How To Play

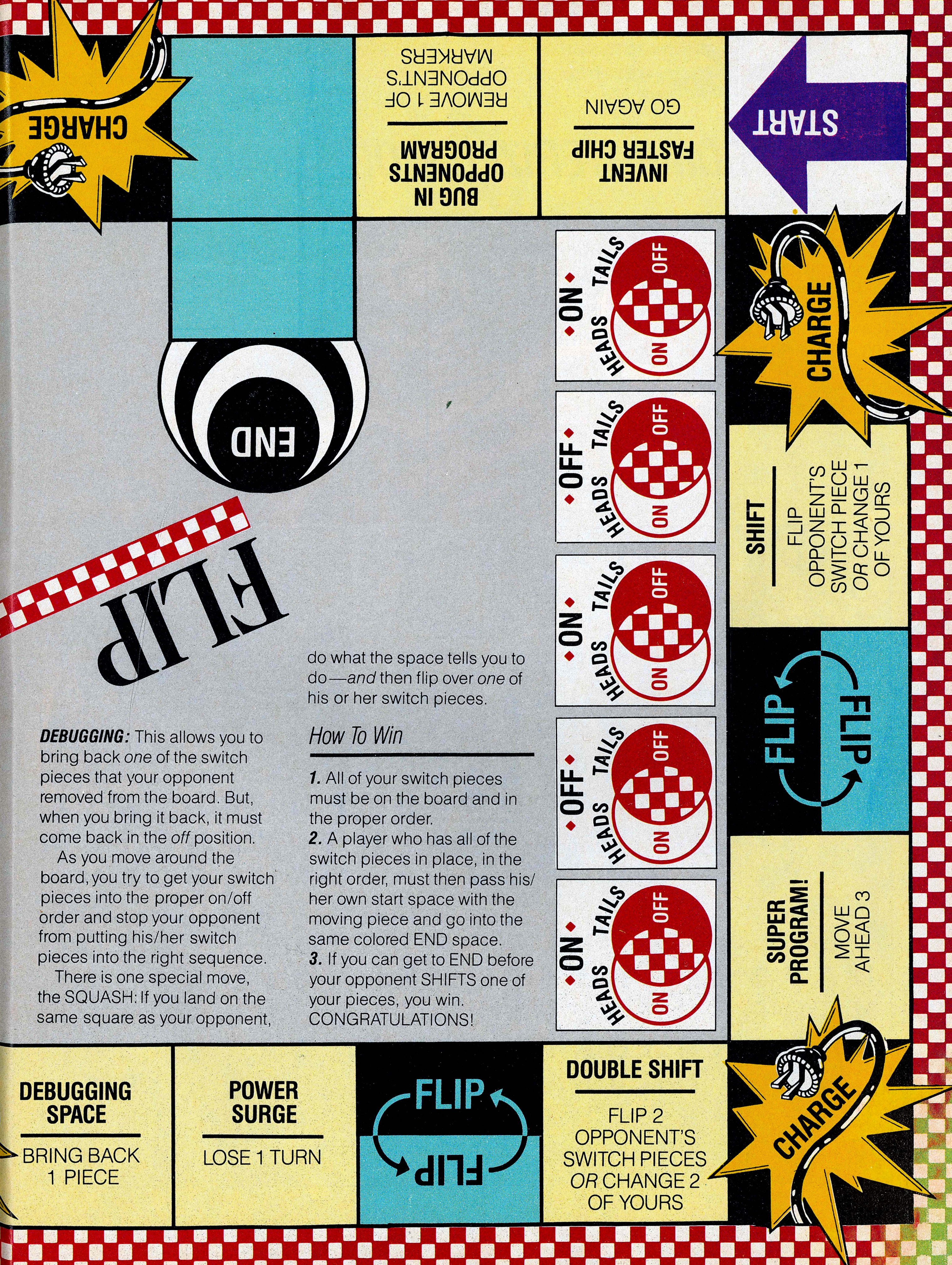
1. Each player places five coins on his/her row of "switches" in the off position, (tails up). Place the sixth coin tails up on a "start" space. (This is a MOVER.)
2. Choose who goes first.
3. Both players move around the board in the same direction. When you land on a space, follow the instructions there. There are four special types of squares.

FLIP: If you land on this spot, you must flip over your MOVER, which will either turn it OFF (tails) or ON (heads).

CHARGE: Every time you land on a "charge" space, you can change one of your *switch* pieces to the same face (on or off) as your MOVER.

SHIFT: You *must* change one of your opponent's switch pieces *or* one of your own from on (head) to off (tail) or vice versa. In the DOUBLE SHIFT space, you *have to* change *two* of your opponent's switch pieces *or* two of your own.


CHARGE
POWER FAILURE
TURN ALL YOUR PIECES TO TAILS (OFF)
DEBUGGING SPACE
BRING BACK 1 PIECE
FLIP
FLIP
SHIFT
FLIP OPPONENT'S SWITCH PIECE OR CHANGE 1 OF YOURS
BACK 1 SPACE
FLIP
FLIP
SHIFT
FLIP OPPONENT OR CHANGE 1 OF YOURS
DEBUGGING SPACE
BRING BACK 1 PIECE
•ON• HEADS TAILS ON OFF
•OFF• HEADS TAILS ON OFF
•ON• HEADS TAILS ON OFF
•OFF• HEADS TAILS ON OFF
•ON• HEADS TAILS ON OFF
END
START
NEW COMPUTER
GO AHEAD 2
PERFECT PROGRAM
LINE ALL YOUR PIECES UP IN PROPER ORDER!
CHARGE


FLIP
START
INVENT FASTER CHIP
GO AGAIN
BUG IN OPPONENTS PROGRAM
REMOVE 1 OF OPPONENT'S MARKERS
CHARGE
END
ON HEADS TAILS ON OFF
OFF HEADS TAILS ON OFF
ON HEADS TAILS ON OFF
OFF HEADS TAILS ON OFF
ON HEADS TAILS ON OFF
CHARGE
SHIFT
FLIP OPPONENT'S SWITCH PIECE OR CHANGE 1 OF YOURS
FLIP
FLIP
SUPER PROGRAM!
MOVE AHEAD 3
CHARGE
DOUBLE SHIFT
FLIP 2 OPPONENT'S SWITCH PIECES OR CHANGE 2 OF YOURS
FLIP
FLIP
POWER SURGE
LOSE 1 TURN
DEBUGGING SPACE
BRING BACK 1 PIECE

DEBUGGING: This allows you to bring back *one* of the switch pieces that your opponent removed from the board. But, when you bring it back, it must come back in the *off* position.

As you move around the board, you try to get your switch pieces into the proper on/off order and stop your opponent from putting his/her switch pieces into the right sequence.

There is one special move, the SQUASH: If you land on the same square as your opponent, do what the space tells you to do—*and* then flip over *one* of his or her switch pieces.

How To Win

1. All of your switch pieces must be on the board and in the proper order.
2. A player who has all of the switch pieces in place, in the right order, must then pass his/her own start space with the moving piece and go into the same colored END space.
3. If you can get to END before your opponent SHIFTS one of your pieces, you win. CONGRATULATIONS!

pencil crunchers

COMPUTERIZED WORD HUNT

BY MIRANDA VAN GELDER

Inside this square, we've hidden 28 different words and names that are part of the computer world. The words may be spelled left to right, right to left, up or down, or on a diagonal. All the names are listed to the right, and we have circled one to get you started. NOTE: Some letters may be used more than once. Can you track down all 28 bits of information? Good luck!

SOFTWARE
DISKETTE
RAM
INPUT
OUTPUT
BYTE
BITS
COMPUTER
HARDWARE
APPLE

IBM
VIC
MONITOR
MODEM
BASIC
DISK DRIVE
PRINTER
ATARI
JOYSTICK
KEYBOARD

COMPUSERVE
ENTER
LOGO
OSBORNE
WORDSTAR
DATA
PILOT
BINARY

(Answers on page 96.)

S	A	O	R	M	R	A	M	A	T	A	R	M	O	N	I	T	O	R	U	O	P	L
O	P	F	G	B	M	R	U	I	O	P	J	O	Y	S	T	I	C	K	V	E	O	T
F	P	M	O	I	A	L	E	W	S	O	N	D	Q	G	N	O	J	E	I	T	K	X
T	L	O	S	B	O	S	Y	T	V	C	J	E	V	I	C	L	M	Y	J	T	L	O
W	E	U	I	M	S	E	I	U	N	W	A	M	B	I	T	S	L	B	H	E	M	K
A	T	A	R	I	W	V	G	C	N	I	M	O	Y	O	P	G	F	O	A	K	V	C
R	D	I	S	K	D	R	I	V	E	P	R	Z	O	B	Y	L	O	A	F	S	D	F
E	R	U	I	N	B	C	Q	G	C	O	M	P	U	T	E	R	K	R	B	I	A	I
A	H	A	R	D	W	A	R	E	O	D	I	S	T	D	R	I	V	D	H	D	T	C
I	N	P	U	T	U	I	P	O	M	J	O	L	P	V	S	F	G	O	K	L	C	H
Y	E	L	O	G	O	M	I	F	P	S	L	D	U	D	A	T	A	M	C	F	J	N
L	J	N	U	I	S	M	L	K	U	W	O	R	T	S	T	A	B	O	I	P	N	G
D	A	Y	T	B	B	H	O	I	S	C	E	J	H	M	T	O	I	U	G	F	C	A
H	J	O	P	E	O	F	T	L	E	K	L	O	P	N	J	B	N	O	P	N	V	F
N	M	O	E	W	R	W	O	R	R	S	T	E	D	U	I	O	A	K	L	P	N	D
G	H	T	U	I	N	G	A	H	V	H	M	E	O	P	A	C	R	K	N	C	D	S
L	M	P	C	G	E	F	T	U	E	B	I	O	P	B	E	T	Y	B	F	D	K	L
W	O	R	D	S	T	A	R	B	V	J	I	P	D	G	H	I	L	P	C	X	D	N

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(CAUTION: Don't smile while playing. The elves may scatter your teeth!)

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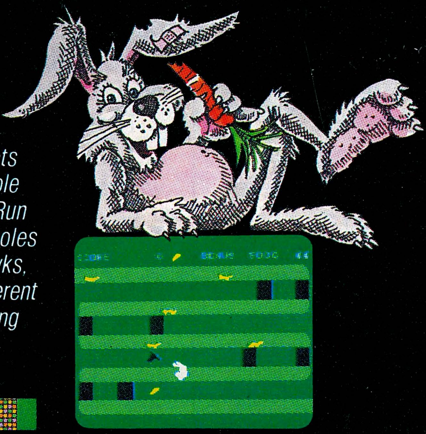
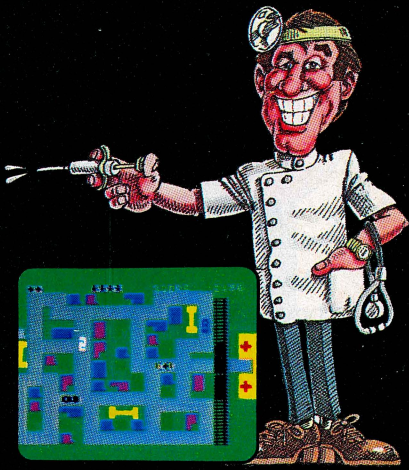


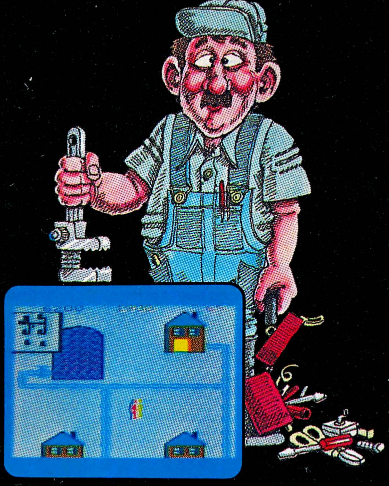
RABBIT TRAIL.
All you want is a few carrots to nibble on . . . and the whole world's trying to stop you. Run through a maze of rabbit holes as you dodge weasels, hawks, traps and cars. Seven different screens provide an unending challenge that'll leave you hopping mad!

RABBIT TRAIL



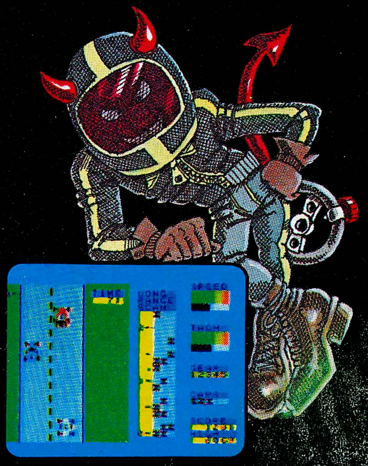
AMBULANCE.
Helpless citizens are dropping like flies . . . somehow you've got to get them all to the hospital before they expire! Speed through city streets, dodging runaway cars, trains, and traffic in a fast-paced strategic adventure guaranteed to get your pulse racing!

AMBULANCE



PIPES.
A simple problem becomes an incredibly complex strategic challenge: Help Arlo, the Absent-Minded Plumber, create a water-supply system for the whole neighborhood. Select the right pipes from the factory, plan your delivery system, hook up the joints and pray that poor Arlo hasn't left the valves open!

PIPES



DRIVING DEMON.
Arcade-style auto racing for the TI 99/4A, in a desperate race against the clock and the competition. Weave through the cars, skid through the oil slicks, then floor it down the straightaway. Your long-range scanner warns you of obstacle cars in your path, but you'll need lightning reflexes to react in time. Mile-a-minute thrills!

DRIVING DEMON

SOFTWARE

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feedback

(Continued from page 4)

T. I. FAN

So far, I have received only one issue of your magazine and already I love it. I really enjoy all your game reviews.

I like computers a lot. I think that they are fun to work with. I do not have a computer, but I plan to get one soon. Your article "Buying the Right Computer," in the October 1983 edition helped me decide that I would like a Texas Instruments. It looks like it is a good computer for a really good price.

Keep up the great work!

—Sadie McLean
Tacoma, WA

MORE COMPUTERS

My family has a Commodore computer. I had a birthday recently (I was 12), and my parents bought me *Gorteck* and *Microchip*. After I started to program with my new game, I really started to like it. That made me send away for a premiere issue of *ENTER*.

I must say I was kind of disappointed when I turned to "Basic Training." In the future would you please put more in your magazine about Commodore computers?

—Shane A. Burgher
Moulton, IA

ENTER is an excellent magazine. The "Random Access" column was, in my opinion, the best in the entire issue. Well, maybe not that particular article, but the idea of a *kids'* column. I've never seen anything like that before in any computer or video magazine.

I also like the idea of relatively simple computer programs ("Basic Training"), in *ENTER*. However, if I did not use an Apple computer when I bought this issue, the column would be useless to me.

Let's say, for example, I owned another computer (like a TRS-80 or a Timex/Sinclair 100) and didn't know how to switch Basics to use the program. What would be more useful is to have a column for every type of computer in every issue.

—Dave Picton
New Haven, CT

Dear Shane and Dave:

You aren't the only readers concerned about seeing programs in ENTER for different models of computers. While there isn't enough room to run a program for every computer in every issue, we intend to provide programs for as many machines as possible. Starting with our next issue, we will be running three programs a month—one long program and two shorter ones. Each program will be for a different machine. You'll be seeing programs for Commodore, TRS-80s, Apple, Atari and Texas Instruments computers on a regular basis. Look for programs for the Timex-Sinclair and IBM-PC in future issues as well.

—Ed.

WRITE US!

We'd like to hear from you. Your ideas, questions and criticisms will help us make ENTER a better magazine. Send your letters to:

FEEDBACK
ENTER Magazine/CTW
1 Lincoln Plaza
New York, NY 10023

bits

(Continued from page 9)

STAR TREK SWITCHEROO

Beam me up, Scotty, I'm about to become a new game.

Don't be surprised if you see old games disappear from your arcade and then reappear as new *Star Trek* Strategic Operations Simulator games. Sega, maker of the *Star Trek* game, is offering arcade operators a deluxe kit that lets them convert *any* upright video game—no matter which company created it—into a *Star Trek* game. The kit includes a color monitor, game electronics, player controls, power supply and graphics for the cabinet.

That's all it takes to launch an old coin-op into the cosmos where no game has gone before.

BAND ON THE RUN

Let's face it, home game players have been hanging out with an odd crowd: Pac-Men, space men, apes and aliens. Isn't it about time they created a game about a nice, cute human? Well, they have.

Thanks to 20th Century Fox Games, you'll soon be able to take Paul McCartney, the cutie-pie Wings songster, home to your computer or games system.

The McCartney game will be a takeoff on his new movie, *Give My Regards to Broad Street*. In the movie—and the game as well—Paul, having lost the tapes to his new album, runs about frantically trying to recover them. The game, now in development, will appear when the movie is released.

Chasing the tapes might be fun—but wouldn't it be even better if you could keep the royalties from the tapes if you found them?

ns moving pieces from point along the lines. Your s to make a row of three r counters. A row can be o and down, across or lly. The first player to e row wins.

material in TIC TAC TOE. Text / Claudia Zaslavsky. All rights A T.Y. Crowell Book, published ement with Harper and Row s, Inc.

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For Ages 6-10.

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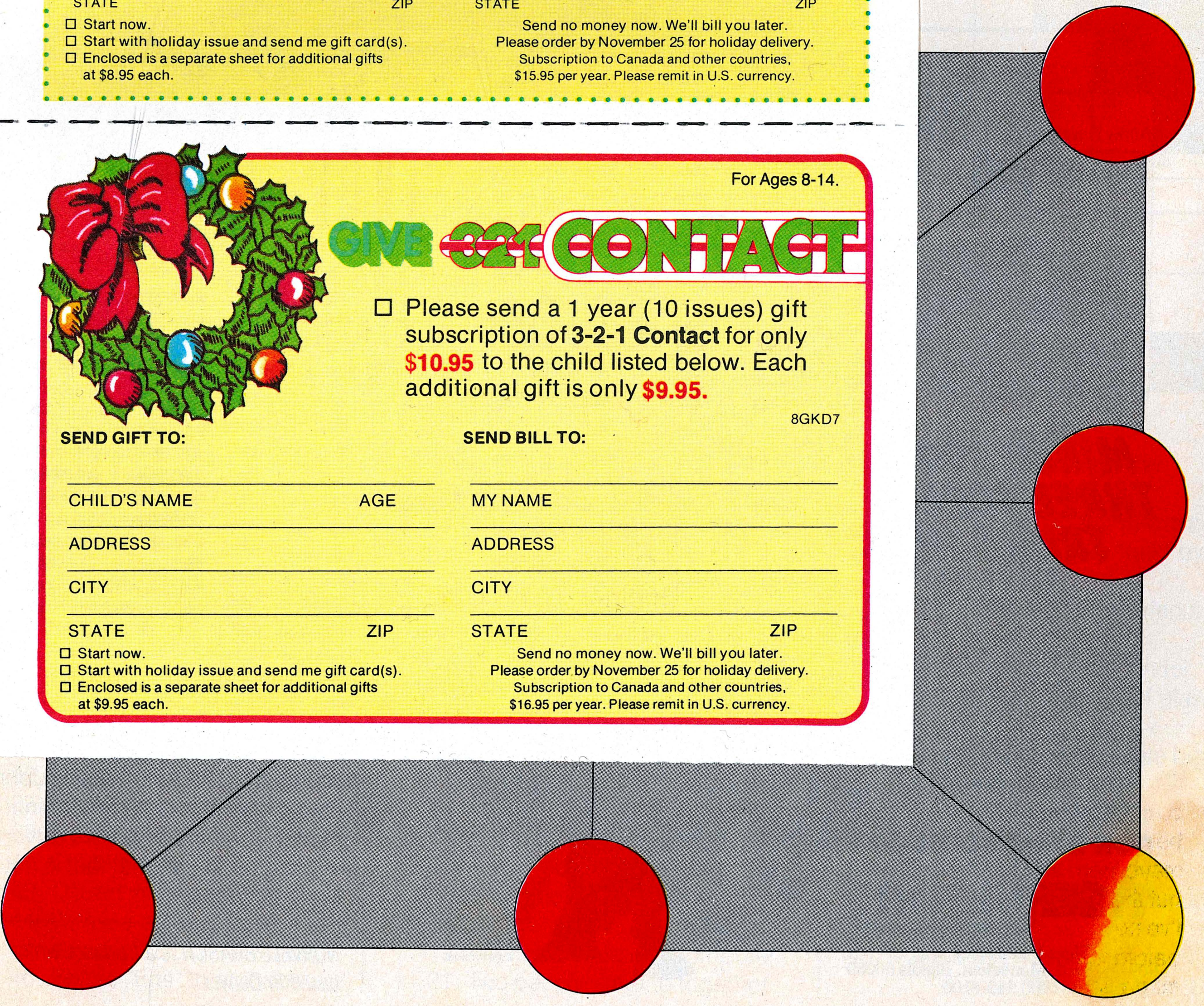

feed back

(Continued from page 4)

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not have a computer, but I
get one soon. Your article
the Right Computer," in the
October 1983 edition help
decide that I would like a T
Instruments. It looks like it
good computer for a really
price.

Keep up the great work!

—Sadie
Tacc

MORE COMPUTE

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(Continued from page 9)

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pencil crunchers

TAPARAN

The game of Tic-Tac-Toe is as old as the ancient Egyptians, who played variations of it, and as new as *WarGames,* where the computer WOPR was frustrated by it. In our last issue, you found out how to play Tic-Tac-Toe with your computer. On this page, you can try a board game Tic-Tac-Toe.

This Tic-Tac-Toe takeoff is very popular in the Philippines, where it is known as *Taparan.* First, get three pennies and three dimes to use as your counters (or make counters out of paper). Each player gets three counters.

Below is the *Taparan* gameboard. The game is played on the nine points where the lines meet.

To start, place your counter on an empty point. Your opponent places his/her counter on any one of the remaining points. You continue to take turns until all six counters are on the board. Now take turns moving pieces from point to point along the lines. Your object is to make a row of three with your counters. A row can be made up and down, across or diagonally. The first player to make the row wins.

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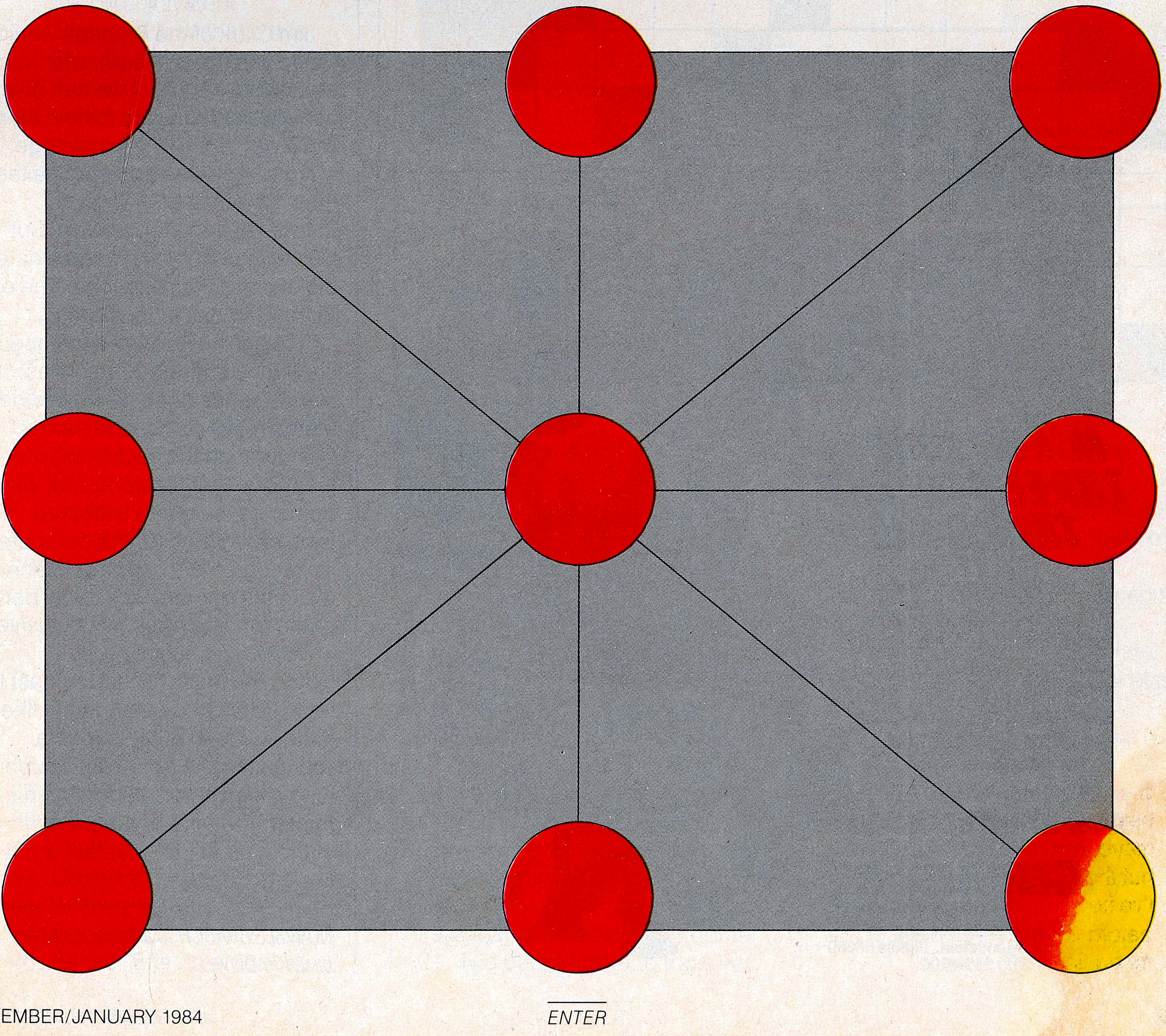

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FIRST DOWN AND 10K TO GO

(Continued from page 49)

The only real obstacle to computer technology's spread through the NFL is a league rule that prohibits a coach from using a computer at a game. The rule reflects some peoples' fear that football will become a battle of computers rather than men, with programmers playing a role equal to coaches and players. Ultimately, some football executives worry, the team with the most advanced computer would win the Super Bowl every year. Or would it?

COMPUTERS SIDELINED

Jim Clark of the Broncos would like to see the anti-computer rule abolished. "Any tool we can give coaches and players to help them win a game is to our advantage." Marge Anderson agrees. She feels that "modernization is going to take over sooner or later." But Burt Gilner, who has made a career out of computerizing the game of football, is less enthusiastic.

"I'm not the least bit convinced it should be changed," he notes. "If everyone has done his homework, there's really no need to have a computer on the field." To Gilner, the notion that the computer will dominate the game is absurd. He is quick to point out the computer's limitations. "The computer cannot make the quarterback throw better, or the running back more elusive, —it's all execution."

And the reality is that, at least for now, the Broncos—and any other team—would rather pay for a young star, like quarterback John Elway, than a computer terminal. No matter how far computers advance in the near future, that fact is not likely to change.

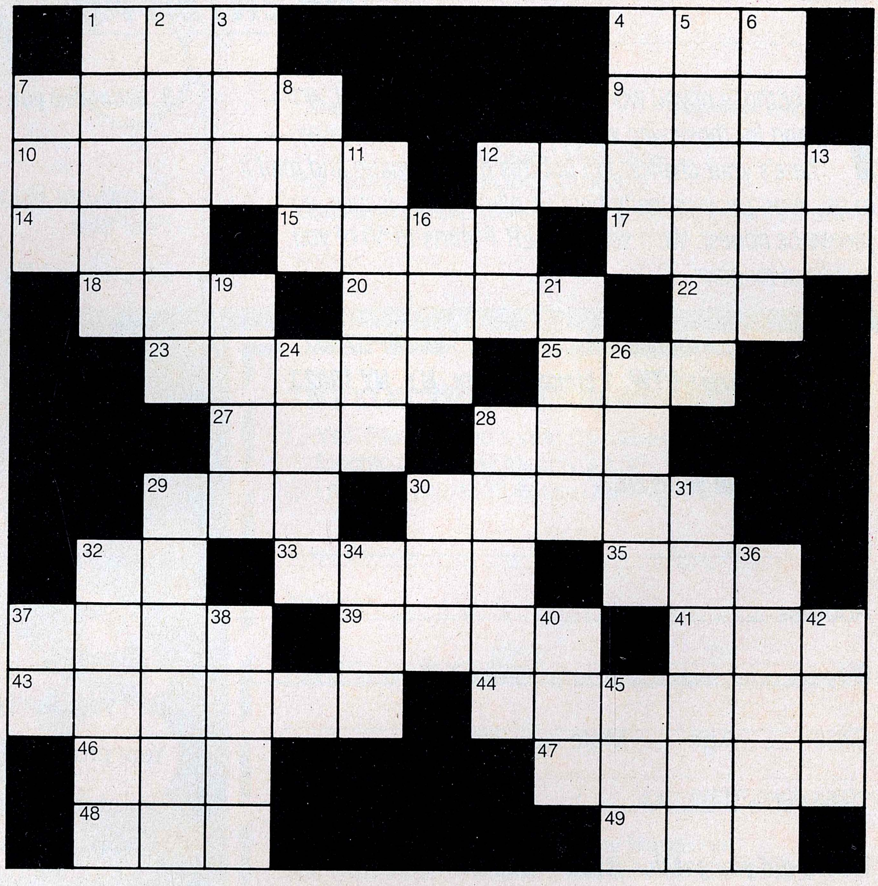
NORVELL BRASCH is a freelance writer based in Denver.

pencil crunchers

COMPU-CROSS

BY LOIS CANTWELL

A lot of data has been deleted from the squares on this crossword puzzle. So, plug in your pencil and fill in the blanks. Clues are sometimes straightforward, sometimes slightly sneaky. Many of them are related to computers and video games.



ACROSS

1. There are ____ numbers in the binary system
4. Cheerleaders shake this
7. Donkey Kong's enemy
9. Franklin—(Computer)
10. Video game that includes pigs and paint rollers
12. What the horizon does in *Turbo*
14. Your dog or cat
15. A Mexican food you *won't* see in the *Fast Food* game
17. Past tense of "says"
18. The color of an apple
20. How Frogger feels about flies
22. U.S.A.'s continent (Abb.)
23. *BurgerTime's* Chef Peter is peppery, not ____
25. Q*Bert has his ____ and downs
27. Plural of T.I.
28. Glance at
29. Bag ____ (He wants your money)
30. Don't ____ a sound!
32. Famous robot, C3__
33. When you're computer-literate, you compute with this
35. Stage of sleep when you dream
37. Constructed something
39. Not far
41. Cut the lawn
43. *Q*Bert* villains are this
44. With ice cream on top, a ____ ____ (two words)
46. Before "Ens" in alphabets
47. Not loud
48. Supersonic jet
49. Gelatin (Abb.)

DOWN

1. He's less wild than before—he's ____
2. Stores information with a pen
3. A robot is a human ___
4. The yellow munching family
5. Atlantic and Pacific
6. TV and newspapers
7. Helpful in adventure games
8. Horse food
11. Boats made of logs
12. Pres. Reagan's nickname
13. Educational Director (Abb.)
16. Shy
19. What you store in a computer
21. Two people singing together
24. "A Chorus ____"
26. How you look through the *Sub-Roc-3D* scope
28. What Bagman does in the mine
29. These let computers "talk" by phone
30. Computers are "___r- friendly"
31. A robot will obey your commands by ____ control
32. Video screens are ____ of glass
34. Whichever one
36. Small thing used to create big special effects
37. *Not* Mr. or Baby Pac-Man
38. Compass point
40. Random access memory
42. What Mr. and Ms. Pac-Man do in Act Two
45. Make a funny face

(Answers on page 96)

INPUT

THE ENTER POLL

For those of you who didn't fill out ENTER POLL #1—and for those who want to do another one, anyway—here's your chance. Fill out this questionnaire and mail it to us. Your answers really help us plan futures issues, so please be honest. We'll send ENTER T-shirts to 50 of you, picked at random.

Mail your questionnaire by January 15 to: **INPUT #2, ENTER Magazine/CTW, 1 Lincoln Plaza, NY, NY 10023**

1. Tell us about yourself.

Name ______________________________

Address ______________________________

City ________________ State & Zip ____________

Grade ____ Age ____ Male ____ Female ____

T-shirt size S ____ M ____ L ____ XL ____

Where did you get this issue of ENTER?

____ In the mail

____ At a computer store

____ At a newsstand

____ Other (please explain) ________________

2. Now, tell us what you thought about ENTER's regular departments:

	I liked it	OK	I didn't like it
Q & A	____	____	____
Bits	____	____	____
Random Access	____	____	____
User Views	____	____	____
BASIC Training	____	____	____
Game Plan	____	____	____
Board Game	____	____	____

3. What did you think of this month's special features?

	I liked it	OK	I didn't like it
Computer Rock's First Star	____	____	____
Electronic LPs	____	____	____
Rock Around Block	____	____	____
Computer Commuter	____	____	____
Game Systems	____	____	____
Football: 10K to Go	____	____	____
Fiction: 'Hungry House'	____	____	____

4. We'd like to know about you and computers :

A. Does your family own a computer?

____ Yes ____ No Which one? ________________

B. If you don't own a computer, do you plan to buy one?

Yes, probably ____ Maybe ____ Probably not ____

Which one might you buy? ________________

C. Do you use a computer in school? Yes ____ No ____

Which one? ________________

D. Tell us what you've used a computer for:

____ Programming ____ Homework

____ Games ____ Graphics

____ Other (please explain) ________________

E. Did you try the program in this month's BASIC Training (Page 59)?

____ Yes, and it worked

____ Yes, and I couldn't get it to work

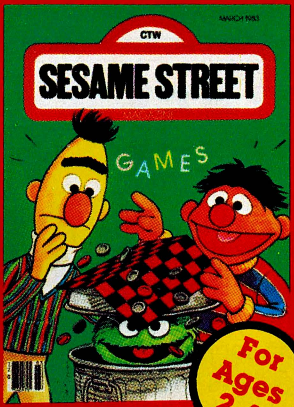
____ No, because ________________

F. Do you read any other computer or games magazines? Yes ____ No ____ Which ones? ____________

____

G. Last but not least: In future issues of ENTER, I'd like to read about: ________________

ENJOY WITH SESAME STREET



For Ages 2-6

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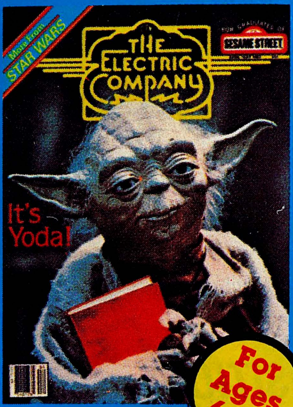
8SAB3

ENTERTAIN WITH ELECTRIC COMPANY



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8SAB3

EXPLORE WITH 3-2-1 CONTACT

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For Ages 8-12

3-2-1 Contact—Science is fun. And you can make it a year-long learning adventure for your favorite 8-12 year olds. 3-2-1 Contact will bring ten big issues packed with puzzles, projects, experiments, questions and answers about the world around us. It's an involving, fun way to learn!

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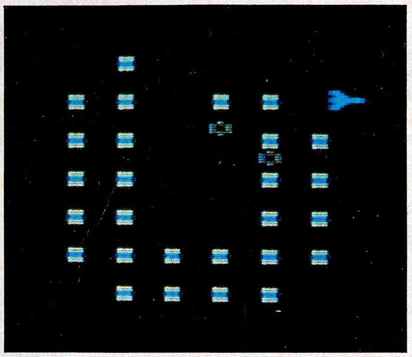
8SAD9

(Continued from page 18)

cute if you have the voice module, and I think the simple graphics do an adequate job, considering the challenge of the cartridge.

SOLAR FOX

(CBS Software, VCS, $30)



"I haven't been so addicted to a VCS game since Space Invaders*!"*—Phil

"A very good, simple-to-learn arcade game with lots of neat extras."—Bernie

The object of this game, like that of *Pac-Man*, is to erase all the dots on the screen. But *Solar Fox* doesn't get boring—because there are over 20 boards, and the pattern of the dots is different for each one.

There are no maze boundaries in *Solar Fox*. You are free to fly your plane in all four main compass directions. You must cross each dot once in order to eliminate them all, and you must dodge fireballs hurled by sentinels that patrol both the top and bottom edges of the screen. The "maze" quality of *Solar Fox* comes from your constant search for safe pathways to the remaining dots.

Boards seven through 20 offer an intriguing variation. When you cross a dot the first time, it changes color; you must cross it again to make it disappear. There are two other elements in this game that we love: the Skip-A-Rack feature and the secret message. Skip-A-Rack allows you to skip the next board (gaining all its points) if you complete the present board fast enough. Each time you complete a challenge board—they appear after every five boards—you receive a letter in the secret message, a six-letter word. This makes you go back to play again long after your hand is killing you!

WRAP-UP

PHIL: So far, all I've gotten are the letters H-E-L, but I'm going to get the rest or die trying!

BERNIE: You really like that challenge, don't you? What I liked most was that the easier game variation was described in the rule book as the "Parent's Version." So true!

POLE POSITION

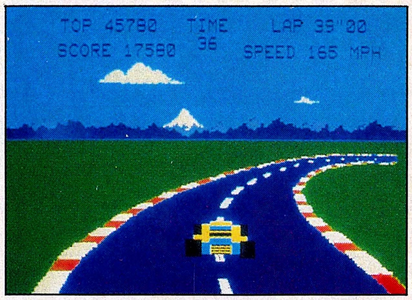
(Atari, 5200, $31.95)

"Qualifying for one of the eight starting positions is a wonderful feature."—Phil

"This is more than a car race, it's a sporting event."—Bernie

Pole Position is a beautiful game from concept to graphics, and Atari has done justice to the coin-op. The movement of the road through turns and back to straightaways is superb, and the race cars look highly detailed against this background.

The unique feature of *Pole Position* is the qualifying lap. In order to race one of the three courses available, your car must first finish a lap in less than 73 seconds. Then, according to how well you performed on that lap, your car is placed in one of eight starting positions on the track. If you get the number eight position, you have to maneuver your way through the pack from the start. But if you can qualify for the pole position, number one in the inside lane, you can get a significant jump on the other cars.



WRAP-UP

BERNIE: The game doesn't have all the different types of scenes of some other race games, but the background mountains and clouds add just the right touch of realism to make it a beautiful day. Until, that is, you car hits a billboard going around a curve!

PHIL: Billboards are your worst enemies; otherwise you can careen around a curve off the road if you like. But I wish they weren't blank.

PEPPER II

(Coleco, ColecoVision, $30.00)

QIX

(Atari, 5200, $31.95)

The final two games on our "best" list were reviewed in ENTER's first issue (October, 1983). We think *Pepper II* is one of the best maze/chase games around. *Qix* gets our approval as a unique, pattern-building challenge.

We'd take our stack of best games off to any desert island. We're sure it would be years before we missed fast food, Super Bowls and other luxuries of civilization.

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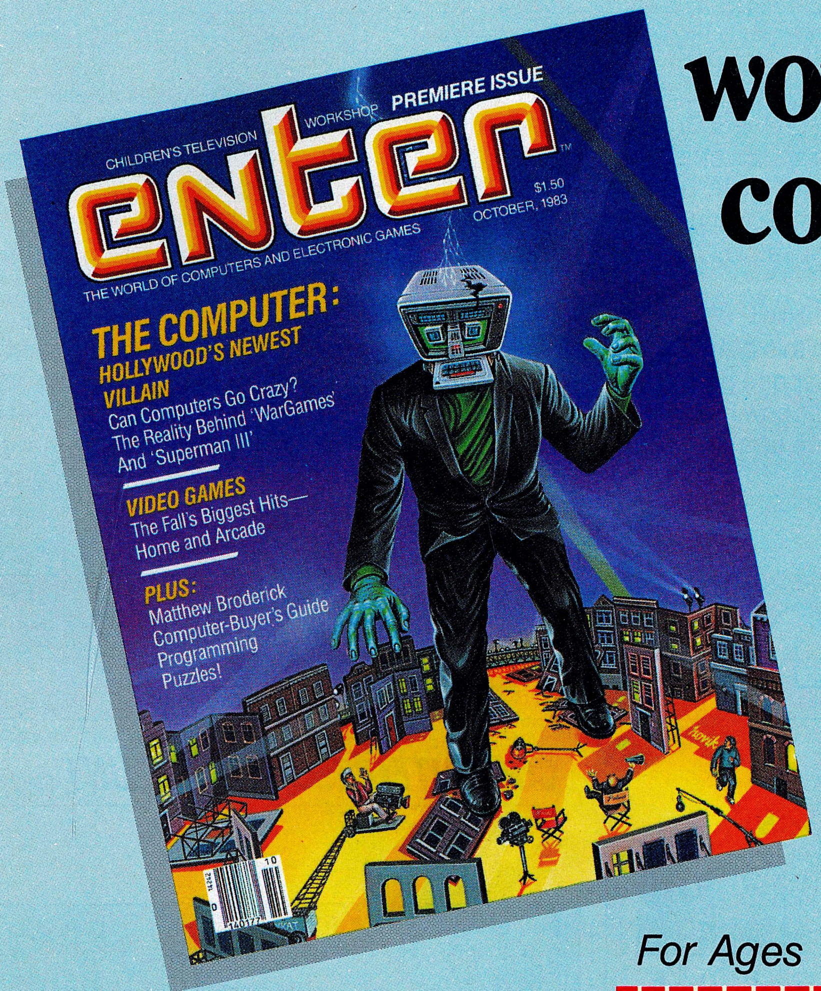
the fun and challenging world of computers!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Parents will love **ENTER** too. It'll explain why computers are such an important part of everyone's future.

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4HEAZ

next

HERE'S WHAT'S COMING IN FEBRUARY'S ENTER:

COMPUTER ARTISTS: They began by creating computer graphics at home. Now 17-year-old twin brothers Craig and Keith Mortensen are professional graphics artists working for top computer companies. Find out how they did it—then study our selections of the best computer graphic software available. *You* can make computer art at home, too!

GAME MAKERS: How is an arcade game created? ENTER takes you from idea to arcade in this behind-the-scenes look at the making of a new space game. Exclusive interviews with game creators show how state-of-the-art technology brings arcade favorites to life.

SCREEN TEST: You can't always judge an electronic game by its package. This ENTER quiz challenges you to match the game box with the graphics from the game. What you see is sometimes *not* what you get.

COMPUTERS COME TO BROADWAY: Hit musicals like *Cats* and *A Chorus Line* are using computers to create astounding special effects on stage. Discover how computers are becoming stars on Broadway.

GAMES GONE GONZO: Here are some zany games you'll probably never see in your local arcade. Our writer conjures up some unlikely—but funny —video games.

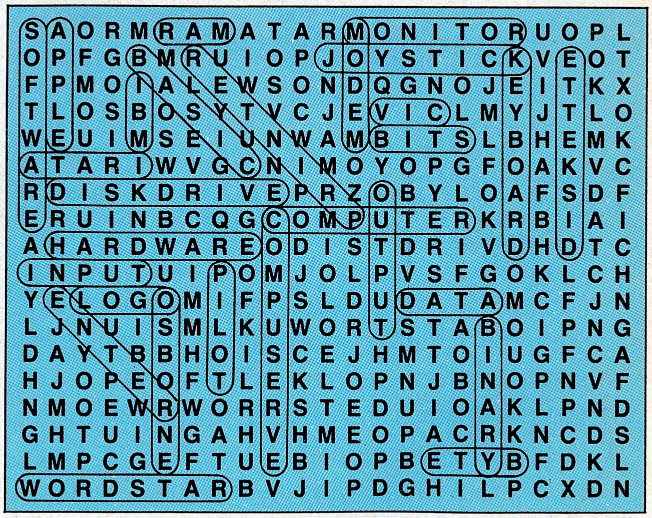
HUNGRY HOUSE, PART II: Scott's missing in the old Nichols' place. Find out what happens when Katie and her computer get on the case in the conclusion to this month's mystery.

answers

COMPU-CROSS *(page 91)*

■	1 T	2 W	3 O	■	■	■	■	■	4 P	5 O	6 M	■
7 M	A	R	I	8 O	■	■	■	■	9 A	C	E	■
10 A	M	I	D	A	11 R	■	12 R	E	C	E	D	13 E
14 P	E	T	■	15 T	A	16 C	O	■	17 S	A	I	D
■	18 R	E	19 D	■	20 F	O	N	21 D	■	22 N	A	■
■	■	23 S	A	24 L	T	Y	■	25 U	26 P	S	■	■
■	■	■	27 T	I	S	■	28 S	E	E	■	■	■
■	■	29 M	A	N	■	30 U	T	T	E	31 R	■	■
■	32 P	O	■	33 E	34 A	S	E	■	35 R	E	36 M	■
37 M	A	D	38 E	■	39 N	E	A	40 R	■	41 M	O	42 W
43 S	N	E	A	K	Y	■	44 L	A	45 M	O	D	E
■	46 E	M	S	■	■	■	■	47 M	U	T	E	D
■	48 S	S	T	■	■	■	■	■	49 G	E	L	■

COMPUTERIZED WORD HUNT *(page 84)*



S	A	O	R	M	R	A	M	A	T	A	R	M	O	N	I	T	O	R	U	O	P	L
O	P	F	G	B	M	R	U	I	O	P	J	O	Y	S	T	I	C	K	V	E	O	T
F	P	M	O	I	A	L	E	W	S	O	N	D	Q	G	N	O	J	E	I	T	K	X
T	L	O	S	B	O	S	Y	T	V	C	J	E	V	I	C	L	M	Y	J	T	L	O
W	E	U	I	M	S	E	I	U	N	W	A	M	B	I	T	S	L	B	H	E	M	K
A	T	A	R	I	W	V	G	C	N	I	M	O	Y	O	P	G	F	O	A	K	V	C
R	D	I	S	K	D	R	I	V	E	P	R	Z	O	B	Y	L	O	A	F	S	D	F
E	R	U	I	N	B	C	Q	G	C	O	M	P	U	T	E	R	K	R	B	I	A	I
A	H	A	R	D	W	A	R	E	O	D	I	S	T	D	R	I	V	D	H	D	T	C
I	N	P	U	T	U	I	P	O	M	J	O	L	P	V	S	F	G	O	K	L	C	H
Y	E	L	O	G	O	M	I	F	P	S	L	D	U	D	A	T	A	M	C	F	J	N
L	J	N	U	I	S	M	L	K	U	W	O	R	T	S	T	A	B	O	I	P	N	G
D	A	Y	T	B	B	H	O	I	S	C	E	J	H	M	T	O	I	U	G	F	C	A
H	J	O	P	E	O	F	T	L	E	K	L	O	P	N	J	B	N	O	P	N	V	F
N	M	O	E	W	R	W	O	R	R	S	T	E	D	U	I	O	A	K	L	P	N	D
G	H	T	U	I	N	G	A	H	V	H	M	E	O	P	A	C	R	K	N	C	D	S
L	M	P	C	G	E	F	T	U	E	B	I	O	P	B	E	T	Y	B	F	D	K	L
W	O	R	D	S	T	A	R	B	V	J	I	P	D	G	H	I	L	P	C	X	D	N

HELENA ON CREATIVITY.

Name:	Helena Paoli
Age:	9
Home:	Belvedere, California
School:	Bel Aire
Hobbies:	Drawing, playing with dolls, reading, swimming
Ambition:	To be a fashion designer
Favorite software:	Creature Creator™ by DesignWare

"I like *Creature Creator* because it's kinda like drawing—only the pictures are alive! I can make different creatures, and then make them do lots of different dances.

"Lots of games—well, you just keep shooting or dodging things until you learn the pattern. Then you can beat it easily, and you get bored.

"*Creature Creator* lets me use my imagination. Now a couple of kids have it, so we get together to compare the creatures and monster dances we've made."

DESIGNWARE ON CREATIVITY. Children learn the most through creative problem solving. That's why *Creature Creator,* like so many DesignWare games, is an open-ended exercise that challenges and nourishes young minds. In a way that's a lot of fun.

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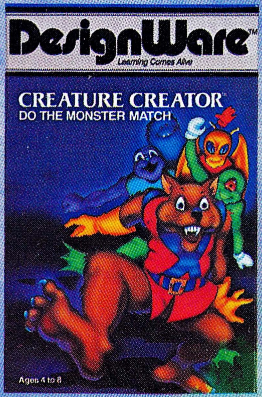
Ask for DesignWare products at your local software retailer. Or call us at 800-572-7767 or 415-546-1866 and ask for our free catalog.

As Helena Paoli says, "Mom, Dad—look what I've created now!"



DesignWare™

LEARNING COMES ALIVE

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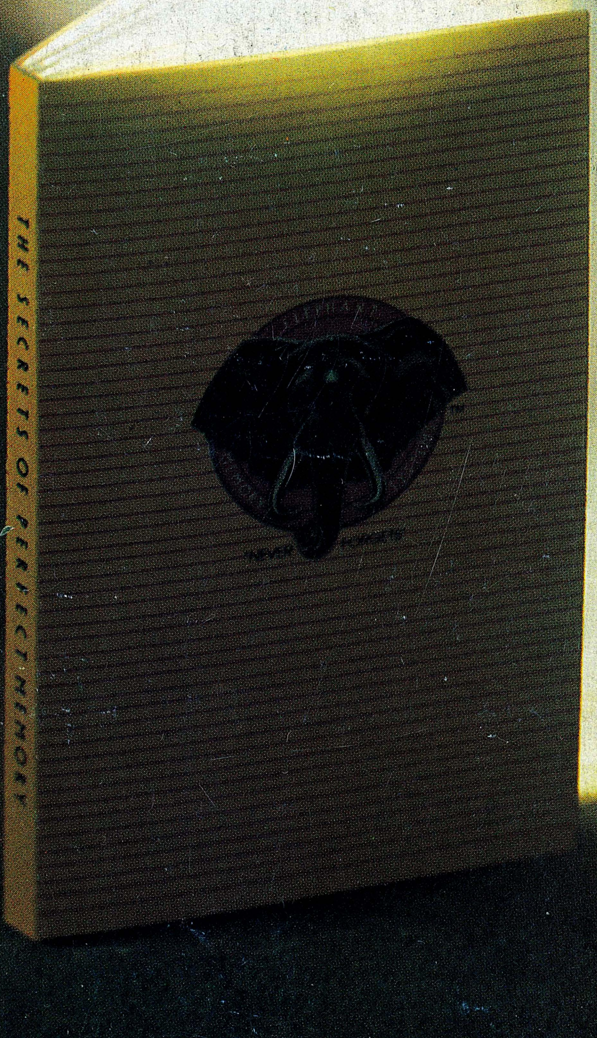
THE SECRETS OF PERFECT MEMORY:
ONE AND ONE HALF EARTH DOLLARS



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